Senior 4 Consumer Mathematics (40S)
Standards Test

Portfolio
Guide for Teachers

2006

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This package contains:

- Introductory Information
- *Student Organizer Sheet*
- Student reflection sheets with Portfolio questions
- Recommended Portfolio Scoring Strategy
- *Portfolio Scoring Rubric*
- *Portfolio Recording Sheet*

Introductory Information

The Portfolio component of the Senior 4 Consumer Mathematics (40S) Standards Test is a classroom-based assessment and may be scored using either a written submission approach or an interview approach at the discretion of the classroom teacher.

The questions for the Portfolio component are designed to function as both writing prompts (written submission approach) and interview prompts (interview approach).

Teachers are encouraged to have students complete preparatory work on the reflection sheets towards the end of the course and to begin the Portfolio component process prior to the assessment period to allow sufficient time for interviewing and/or marking.

Recommendations for Preparing Students for the Portfolio component

1. Inform students whether they will be submitting their portfolios for marking (written submission approach) or whether they will be bringing their portfolios to an interview of approximately 20 minutes in duration.

2. Share the scoring rubric with students. The more information they have on the method of evaluation, the more prepared they will be to meet the expectations.

3. Remind students to use the *Student Organizer Sheet* to assist them in selecting work samples that illustrate different skills as well as different units of study. For example, selecting three tests from three different units will not score as well as three different types of consumer mathematics activities from three different units in which the student demonstrates different competencies.

4. Inform students that their reflection sheets are the method by which they will be evaluated if the written submission approach is being used. If the interview approach is being used, the reflection sheets provide prompts for discussion during the interview.

5. Explain to students that each reflection sheet has a Part A and a Part B. Both parts provide prompts students should follow in preparing their submission (oral or written). These prompts are designed as focal points for their written response (written submission approach). In the interview approach, these are the verbal prompts that the interviewer uses to engage students in discussing each portfolio selection.

6. Make students aware that interviewers conduct similar interviews for all students.

7. When using the written submission approach, teachers will not proofread or make suggestions about written responses prior to submission.

Recommendations for Administering the Portfolio Component

1. Introduce the practice of maintaining a portfolio early in the year. Inform students that part of their Provincial Test Standards Mark is based on their portfolio (30%).

2. Create a system for organizing and storing portfolios. Some teachers have had students use storage containers such as pizza boxes, file folders or accordion files.

3. Form your decision to interview students or mark their submitted portfolios early in the semester/year. Inform the students of your plan.

4. Plan sufficient time and reserve a quiet place for interviewing/marking the Portfolio component. All marks must be recorded by January 25, 2006.

5. **Photocopy sufficient quantities** of the *Student Organizer Sheet* and student reflection sheets. Distribute the sheets to students to allow sufficient time for them to make good choices in their sample selections and to construct thorough responses.

6. If interviewing, relax the student by describing the process. Let the student know in advance if you will be jotting down notes as the interview proceeds.

7. Keep the recording sheets in a secure location with demographic forms and the *Attendance Form*. The *Attendance Form* is required during the remaining two parts of the standards test.

Recommendations for Scoring the Portfolio component

This package contains sufficient numbers of scan sheets (based on the number of students registered for your course) for recording portfolio scores. Keep a record of each student's results. A recording sheet template is provided to assist you.

Specific directions for scoring the portfolios are listed on page 13.

Booklet No.:

Student Organizer Sheet

Senior 4 Consumer Mathematics (40S) Standards Test: Portfolio

Please include the following five (5) work samples and their accompanying Reflection Sheet:

MANDATORY SAMPLES (3)

☑ **Career/Life Project**
(Use the *Portfolio Sample: Career/Life Project Reflection Sheet*)

☑ **Personal Income Tax Form**
(Use the *Portfolio Sample: Personal Income Tax Form Reflection Sheet*)

☑ **Design and Measurement**
One work sample reflecting any one of the following curriculum outcomes:
- Draw simple objects as oblique projections
- Sketch simple objects in "exploded" format
- Draw the parts of a simple object to scale
- Describe the differences among oblique projections, "exploded" diagrams, and constituent parts diagram for objects
(Use the *Portfolio Sample: Design and Measurement Reflection Sheet*)

STUDENT CHOICE SAMPLES (2)

☑☑ **Two (2) work samples of your choice**
- Samples from two (2) different Units of Study demonstrating a variety of skills and strategies. See the list of Types of Work Samples below for suggestions.
(Use the *Portfolio Sample: Student Choice Reflection Sheets*)

Units of Study:

- ❑ Problem Analysis
- ❑ Investigative Project
- ❑ Analysis of Games and Numbers
- ❑ Government Finances
- ❑ Investments
- ❑ Personal Finance
- ❑ Design and Measurement
- ❑ Statistics
- ❑ Variation and Formulas

Types of Work Samples (You may want to use one of the following suggestions):

- ❑ Budget
- ❑ Daily Assignment
- ❑ Journal Entry
- ❑ Technology/Spreadsheet/CAD
- ❑ Other (specify) _____
- ❑ Case Study
- ❑ Discussion Notes
- ❑ Project
- ❑ Test/Quiz
- ❑ Chart/Graph/Diagram
- ❑ Game/Puzzle
- ❑ Research
- ❑ Unit Summary

Booklet No.:

Portfolio Sample: Career/Life Project Reflection Sheet

This activity allows students to show they have produced work that reflects the following curriculum areas:

- describe factors important in selecting careers (factors such as: job description, educational background, salary/wage levels, and employment opportunities for advancement)

- analyze the lifestyle one specific career could entail (in terms of monthly budget, lifestyle appropriate to the career, and any negative factors in the job)

Directions for Students

PART A: THE REAL WORLD CONNECTION

- What factors did you consider when selecting the career you described?
- Describe the monthly budget and lifestyle you would expect when you are working in your chosen field. You may want to compare this to the lifestyle you would have when training for your career.

Directions for Students

PART B: THE MATHEMATICS CONNECTION

Explain how this project connects to Consumer Mathematics.

- What ideas did you apply or integrate from other Consumer Mathematics units?

Booklet No.:

Portfolio Sample: Personal Income Tax Form Reflection Sheet

This activity allows students to show they have produced work that reflects the following curriculum areas:

- explain the purpose of different sections of the T1 General Income Tax Form
- complete income tax forms for a single parent with a child and a married couple without a child

Directions for Students

PART A: THE REAL WORLD CONNECTION

Compare the differences between an income tax return for a single parent with a child and the return for a married couple without a child.

- Which income tax forms (electronic or paper copies) did you use to complete an income tax return?
- What factors might lower the tax owing or increase the refund? Be specific.

Directions for Students

PART B: THE MATHEMATICS CONNECTION

Describe how the income tax form connects to Consumer Mathematics

- What ideas did you apply or integrate from other Consumer Mathematics units?

Booklet No.:

Portfolio Sample:
Design and Measurement Reflection Sheet

This activity allows students to show they have produced work that reflects one of the following curriculum areas:

- draw simple objects as oblique projections
- sketch simple objects in exploded format
- draw the parts of a simple object to scale
- Describe the differences among oblique projections, "exploded" diagrams, and constituent parts diagram for objects

Directions for Students

PART A: THE REAL WORLD CONNECTION

Describe your sample from the Design and Measurement Unit and explain how this sample connects to everyday life.

- What did you learn about your personal skills and interests from doing the work in this unit?
- What types of activities or workplaces require the use of design and measurement skills?
- Describe situations or activities that would give you an opportunity to apply what you have learned in the Design and Measurement unit.

Directions for Students

PART B: THE MATHEMATICS CONNECTION

Describe the processes involved in producing the work sample you chose.

Booklet No.:

Portfolio Sample: Student Choice Reflection Sheet

Directions for Students

PART A: THE REAL WORLD CONNECTION

Explain how this sample connects to every day life.

- What did you learn about your personal skills and interests?
- What types of activities or workplaces use this kind of information?

Directions for Students

PART B: THE MATHEMATICS CONNECTION

Explain the mathematical skills you needed to produce this sample of work.

Recommended Portfolio Scoring Strategy

Students are scored on two dimensions, using a pre-established scoring rubric (see page 16), whether an interview approach or the written submission approach is being used.

Dimension 1

THE MARKER HOLISTICALLY SCANS THE PORTFOLIO

This scoring dimension focuses on whether the portfolio is complete and how the work has been communicated and organized. The marker is answering the questions, "Generally, are the portfolio samples organized, complete, and is work communicated appropriately? Do the student choice samples illustrate different types of work (e.g. not just tests)?" The following marking strategy is recommended:

- Scan the student's portfolio for a general sense of how the student has selected samples and presented them.
- Read the descriptors under Level 2 and decide if they are appropriate. If not, read the descriptors of the level above or below.
- If only some of the descriptors in a particular level of performance fit, determine the degree to which the student is approaching the next or previous level and whether the "approaching level" is a more appropriate description of the portfolio.

Dimension 2

THE MARKER HOLISTICALLY CONSIDERS EACH STUDENT SAMPLE

Dimension 2 focuses on each sample in the student's portfolio collection. The marker is answering the question, "For each sample, has the student linked the reflection sheet to the work sample in terms of "real world connections" and "mathematics connections"?"

SUGGESTED APPROACH

Written Submission Approach

- Read each student's reflection sheet for evidence of specific reflections related to each portfolio sample.
- Form a judgement on each sample provided, considering the evidence of mathematical connections and the connections to the real world.

Interview Approach

- If using the interview approach, ask the student to respond orally to each prompt.
- Listen for evidence of specific reflections related to each portfolio sample. Form a judgement based on the information provided by the student, considering the evidence of mathematical connections and connections to the real world.

INSUFFICIENT CATEGORY

The "insufficient information" category is used when the marker cannot make a judgement on the portfolio for any of the following reasons:

- The portfolio is not legible
- No student reflection is provided/the reflection sheet is missing
- The portfolio does not fit the descriptors on the rubric (does not meet requirements)
- The sample is missing

If the portfolio is not submitted, then shade in the "no submission" bubble beside the "Total Score" and do not shade in the "insufficient information" bubbles.

Consumer Mathematics (40S)—Portfolio Scoring Rubric

Consumer Mathematics (40S) PORTFOLIO Scoring Rubric	Level 1 DESCRIPTORS	Level 2 DESCRIPTORS	Level 3 DESCRIPTORS
Dimension 1 • Communication/Organization/ Sample Selection	• Limited organization and communication of necessary information (samples are missing or incomplete)	• Good organization and communication of necessary information (samples are complete)	• Exceptional organization and communication of necessary information (varied selection of samples)
Dimension 2 • **Part A** The Real World Connection	• Limited attempt to connect concepts to everyday life	• Good connections between mathematical concepts and everyday life	• Makes exceptional multiple or in-depth connections between mathematical concepts and everyday life.
• **Part B** The Mathematics Connection	• Limited reasoning; ideas are sometimes unrelated to mathematical concepts • Limited explanation related to portfolio work sample	• Good reasoning; most ideas are related to relevant mathematical concepts • Good explanation related to portfolio work sample	• Exceptional reasoning; insightful reflection using relevant mathematical concepts • Exceptional explanation related to portfolio work sample

Performance Level	Level 1	Approaching Level 2	Level 2	Approaching Level 3	Level 3

Manitoba

PLEASE DO NOT WRITE IN THIS AREA

[SERIAL]

Senior 4 Consumer Mathematics (40S) Standards Test—2006

Portfolio Scoring Sheet

INSTRUCTIONS

- Use an HB pencil only.
- Do not use ballpoint or felt tip pens.
- Do not mark other areas on this form.
- Shade the appropriate circle.
- Erase cleanly any marks you wish to change.

CORRECT: ● INCORRECT: ⊘ ⊗ ◒ ◔

○ **INTERVIEW APPROACH**

○ **WRITTEN SUBMISSION**

	Insufficient Information/evidence	Level 1	Approaching Level 2	Level 2	Approaching Level 3	Level 3	
Dimension 1 • Communication/Organization/Sample Selection	⓪	②	④	⑥	⑧	⑩	101
Dimension 2 Sample 1: Career/Life Project • The Real World Connection (Part A) • The Mathematics Connection (Part B)	 ⓪ ⓪	 ① ①	 ② ②	 ③ ③	 ④ ④	 ⑤ ⑤	 102 103
Sample 2: Personal Income Tax Form • The Real World Connection (Part A) • The Mathematics Connection (Part B)	 ⓪ ⓪	 ① ①	 ② ②	 ③ ③	 ④ ④	 ⑤ ⑤	 104 105
Sample 3: Design and Measurement • The Real World Connection (Part A) • The Mathematics Connection (Part B)	 ⓪ ⓪	 ① ①	 ② ②	 ③ ③	 ④ ④	 ⑤ ⑤	 106 107
Sample 4: (Choice 1) • The Real World Connection (Part A) • The Mathematics Connection (Part B)	 ⓪ ⓪	 ① ①	 ② ②	 ③ ③	 ④ ④	 ⑤ ⑤	 108 109
Sample 5: (Choice 2) • The Real World Connection (Part A) • The Mathematics Connection (Part B)	 ⓪ ⓪	 ① ①	 ② ②	 ③ ③	 ④ ④	 ⑤ ⑤	 110 111
Subtotals			+	+	+	+	= / 60
No submission	Ⓝ						

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Senior 4 Consumer Mathematics (40S)
Standards Test

Project Resource Package

Music Festival

November 2005

Manitoba
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Welcome to the Music Festival Project

General Information

The purpose of the first session is to provide an opportunity for you to:

- develop an understanding of the project requirements;
- become familiar with the information contained in the *Project Resource Package*; and
- share ideas related to the project in a brainstorming session.

After the first project session the following conditions apply:

1. Two additional class work periods will be provided.
2. Your teacher cannot assist you in developing or revising your project.
3. You may conduct research on your project between work periods.
4. You must submit an individual project that reflects your own work.

Guidelines for the Music Festival Project

This project requires you to take the view of a person who is planning and organizing a music festival in order to raise money for disaster relief.

In doing this project the following scenarios and requirements apply:

1. The music festival is to take place in Brandon on a Saturday in the month of September.
2. A ticket promotion agency will cover the cost of printing and selling all tickets as well as advertising and promoting your event for the fee of $2 per ticket or pass sold.
3. There is no minimum cost per ticket that you can charge but there is a maximum cost of $8 per individual event ticket.
4. You can expect to sell a minimum of 70% of all seats for all performances. It is not reasonable to expect a sell-out for any performances.
5. You need to:
   - book the performers;
   - rent sound and light systems from the venues; and
   - decide on costs for individual event tickets.
6. You must have a minimum of seven performances and have a minimum of three locations to choose from.
7. All performances will require a two-hour time block (one hour to set up and take down the performers' equipment and one hour to perform).
8. Profits can be made from canteen and clothing sales at all locations. Expect a minimum of 10% of the people who attend to buy one clothing item and one canteen item.
9. Profit on canteen and clothing items cannot exceed 100% of your cost for these items.
10. You have a start-up interest-free loan of $4 000 to help cover expenses related to bringing the artists to Brandon. You are expected to raise enough funds to pay back the loan and generate a minimum of $2 000 in profit.
11. Each venue provides all staff needed for staging the performances.
12. The performers will play for free because you provide:
    - $0.36/km to cover the cost of their return mileage (note: groups will travel in one vehicle);
    - transportation to and from the venues;
    - one hotel room and $50 per day meal allowance for each performer; and
    - sound and lighting systems.
13. A local car dealership is donating the use of five vans and providing drivers at no cost to drive performers to venues.
14. Fifty volunteers will assist with the festival and will receive a "volunteer appreciation package".

Directions for the Music Festival Project

Your completed project must include the following information:

- a detailed schedule showing all performances and expected attendance at each performance;
- a detailed budget indicating all projected revenues, expenses and profit; and
- all calculations related to your budget.

Justify any assumptions or decisions you make in completing your project.

Your completed project must:

- be separate from this *Project Resource Package* booklet;
- be well organized and clearly presented with an introduction and conclusion; and
- be written or printed in blue or black ink or printed using black ink from a printer.

Project Resource Package

This *Resource Package* includes:

- performance venues, possible musical performers and booking information; and
- costs associated with the festival.

Use of *Resource Package*:

This resource package is designed to provide background information, charts, diagrams, and tables to assist you in completing your project. You may use additional or alternate resources if you wish. Remember to submit your project separate from this booklet.

Performance Venues, Possible Musical Performers and Booking Information

Performance Venues

Venue Name	Seating Capacity
West Auditorium	817
Pioneer Hall	600
Portage Theatre	220
Watson Stage	208

Possible Performers

The following performers are available for you to book.

Musical Performer	Home Town	Distance From Brandon	Number of Performers	Special Needs
Kathy Rhymes	Thompson	880 km	1	None
Johnny and the Foot Stompers	Killarney	100 km	5	Fruit and vegetable platter prior to performance
Bill Smyth	Winnipeg	200 km.	2	None
Raj Rahmahal	Winnipeg	200 km	4	Only hot finger food for refreshments prior to performance
Icelandic Jam	Gimli	300 km	3	Fruit juice before each performance
Celtic Kings	Steinbach	270 km	5	None
C'est La Vie	St. Adolphe	220 km	2	Bottled water prior to performance

Costs Associated with the Festival

Hotel Rooms

- Each performer requires his/her own room.
- All hotels in Brandon are charging a flat rate of $50 (including taxes) per night for each performer's room.

Meal Allowance

Each performer will receive $50 per day for food.

Performance Venues Rental Fees

Venue Name	Seating Capacity	Rental Fees (per day)
West Auditorium	817	$1 500
Pioneer Hall	600	$1 100
Portage Theatre	220	$330
Watson Stage	208	$500

Technical Equipment Rental Fees

Category	Rental Fees (per day, per location)
Sound System	$400
Lights	$200

Volunteer Appreciation Package

Each volunteer will receive a special package, which will cost $25.

Catering (including taxes)

Note: These items are for performers prior to each of their performances.
See the "Special Needs" section on page 3.

Item	Cost (per person)
Fruit and Vegetable Platter	$5.00
Assorted Cheeses, Crackers	$5.00
Soft Drinks, Coffee	$2.00
Bottled Water	$2.00
Hot Finger Food	$5.00
Soft Drinks	$2.00
Fruit Juice	$2.00

Canteen Supplies (including taxes)

Item	Your cost (per item)
Candy	$0.50
Chips (bag)	$0.50
Soft Drink (can)	$0.30
Water (bottle)	$0.30
Granola Bar	$0.30
Fruit	$0.50
Sandwich	$1.00
Pizza Slice	$1.00

Clothing (including design, screening charges and taxes)

Style	Your cost (per item)
T-Shirt	$8.00
Sweatshirt	$12.00
Cap	$15.00

Senior 4 Consumer Mathematics (40S)
Standards Test

Project Scoring Guide

Music Festival

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Excerpts from the student's resource package

Welcome to the Music Festival Project

General Information

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Directions for the Music Festival Project

Your completed project must include the following information:

- a detailed schedule showing all performances and expected attendance at each performance;
- a detailed budget indicating all projected revenues, expenses and profit; and
- all calculations related to your budget.

Justify any assumptions or decisions you make in completing your project.

Your completed project must:

- be separate from this *Project Resource Package* booklet;
- be well organized and clearly presented with an introduction and conclusion; and
- be written or printed in blue or black ink or printed using black ink from a printer.

Note to Teacher

The purpose of this document is to assist teachers in detecting reasonable calculations and sufficient data when scoring student projects. The document includes a scoring rubric and sample calculations pertaining to the Project.

A variety of organizational structures and types of responses to the Music Festival Project is anticipated. Student explanations for their decision-making will vary. When organizing the Festival, students may consider many issues, including:

- Budget
- Choice of artists
- Performance schedule

Scoring the Project:

Student projects are scored using a pre-established rubric that covers three broad categories. The scores awarded are placed on a *Project Scoring Sheet*. The Organization/Structure and Communication category primarily focuses on how the student has organized and communicated work. Judging whether the student selected required data and used appropriate mathematical procedures is the primary focus of the Data Selection/Analysis category. The third category, Concepts/Reasoning, is primarily focused on judging if the student understood necessary concepts and demonstrated logical reasoning in drawing conclusions and making justifications.

The order of proceeding through the rubric and completing the *Project Scoring Sheet* is a decision teachers make based on personal preference. For example, some teachers may decide to start by reviewing the Organization/Structure and Communication category first. This would involve reviewing the project to judge how the student met the criteria outlined in the rubric. These teachers might then move to the Data Selection/Analysis category and finally to the Concepts/Reasoning category. Other teachers may decide to start at the Data Selection/Analysis category then move to the Organization/Structure and Communication category followed by the Concepts/Reasoning category etc.

The Consider the Following section of the rubric is specific to each project. The items listed under the heading are not intended to be exhaustive but rather they are included to assist teachers in their marking.

> If the project is not submitted, then shade in the "no submission" bubble and do not shade in the "insufficient informatioh" bubbles.

Consumer Mathematics (40S)—Project Scoring Rubric
Music Festival Project

Consumer Mathematics (40S) PROJECT Scoring Rubric	Consider the Following:
Organization/Structure and Communication **Has the student communicated mathematical and other relevant information in a clear and organized way?** – Organization/Structure (effective use of introduction[s], sections and/or headings, conclusion[s] or summary statement[s]…) – Communication (effective use of charts, tables, graphs, etc. to display data and relevant information; clear presentation; effective use of terminology)	– Introduction, heading(s)/subheading(s), conclusion(s) – Presentation of any charts/tables/graphs… – Terminology related to budgeting
Data Selection/Analysis **Has the student selected and analyzed data appropriately?** – Selection (required data selected) – Analysis (exploration of any relevant patterns or relationships, used mathematical procedures appropriately)	– Transportation – mileage cost – Canteen Costs – Clothing Costs – Meal Allowance Costs – Venues Costs – Hotel Costs – Technical Equipment Costs – Estimated Attendance – Ticket Promotion Agency Fee – Volunteer Appreciation Package Costs – Ticket Price – Performers and Venues Schedules – Repayment of $4 000 loan in budget – Budget (projected revenues, expenses and profit)
Concepts/Reasoning **Has the student demonstrated an understanding of mathematical concepts as well as the ability to reason logically and draw appropriate conclusions?** – Concepts (demonstrated understanding of essential mathematical concepts…) – Reasoning (evidence reasoning/ logical thinking was involved in producing the project and in drawing appropriate conclusions…)	– Realistic report – Appropriate assumptions/justifications/ explanations/ conclusions – Realistic schedule for performers and venues – Realistic budget
Performance Level:	

Level 1 DESCRIPTORS	Level 2 DESCRIPTORS	Level 3 DESCRIPTORS
Example: – little (no) organization of ideas; limited (no) use of introductions, sections/headings, conclusion(s)/summary statement(s) – partially legible; important information/details missing; vague presentation; difficult to follow	Example: – most ideas organized; generally appropriate use of introductions, sections/headings, conclusion(s)/summary statement(s) – legible; most important information/details evident; generally effective presentation; can follow with little difficulty	Example: – exceptional organization of ideas; exemplary use of introductions, sections/headings, conclusion(s)/summary statement(s) – easy to read; all information/details evident; very effective presentation; easy to follow
Example: – limited selection of required data – limited (no) exploration of patterns/relationships; limited use of appropriate mathematical procedures (major computational errors)	Example: – most required data selected (minor omissions) – evidence patterns/relationships explored; generally used appropriate mathematical procedures (some computational errors)	Example: – all required data selected – insightful exploration of patterns/relationships; all mathematical procedures used were appropriate (only minor computational errors)
Example: – limited evidence that the student understood the relevant mathematical concepts – limited evidence of logical reasoning that led to appropriate conclusions; missing or incorrect justification(s)/explanation(s)	Example: – evidence that the student grasped the essential mathematical concepts – evidence of logical reasoning (some minor inconsistencies) that led to appropriate conclusions; some plausible justification(s)/explanation(s)	Example: – evidence that the student understood all relevant mathematical concepts – evidence of insightful and consistent reasoning that led to appropriate conclusions; clear and logical justification(s)/ explanation(s)

Level 1	Approaching Level 2	Level 2	Approaching Level 3	Level 3

Consumer Mathematics (40S)—Project Scoring Rubric
Music Festival Project

Consumer Mathematics (40S) PROJECT Scoring Rubric	Consider the Following:
Organization/Structure and Communication **Has the student communicated mathematical and other relevant information in a clear and organized way?** – Organization/Structure (effective use of introduction[s], sections and/or headings, conclusion[s] or summary statement[s]…) – Communication (effective use of charts, tables, graphs, etc. to display data and relevant information; clear presentation; effective use of terminology)	– Introduction, heading(s)/subheading(s), conclusion(s) – Presentation of any charts/tables/graphs… – Terminology related to budgeting
Data Selection/Analysis **Has the student selected and analyzed data appropriately?** – Selection (required data selected) – Analysis (exploration of any relevant patterns or relationships, used mathematical procedures appropriately)	– Transportation – mileage cost – Canteen Costs – Clothing Costs – Meal Allowance Costs – Venues Costs – Hotel Costs – Technical Equipment Costs – Estimated Attendance – Ticket Promotion Agency Fee – Volunteer Appreciation Package Costs – Ticket Price – Performers and Venues Schedules – Repayment of $4 000 loan in budget – Budget (projected revenues, expenses and profit)
Concepts/Reasoning **Has the student demonstrated an understanding of mathematical concepts as well as the ability to reason logically and draw appropriate conclusions?** – Concepts (demonstrated understanding of essential mathematical concepts…) – Reasoning (evidence reasoning/ logical thinking was involved in producing the project and in drawing appropriate conclusions…)	– Realistic report – Appropriate assumptions/justifications/ explanations/ conclusions – Realistic schedule for performers and venues – Realistic budget
Performance Level:	

Level 1 DESCRIPTORS	Level 2 DESCRIPTORS	Level 3 DESCRIPTORS
Example: – little (no) organization of ideas; limited (no) use of introductions, sections/headings, conclusion(s)/summary statement(s) – partially legible; important information/details missing; vague presentation; difficult to follow	Example: – most ideas organized; generally appropriate use of introductions, sections/headings, conclusion(s)/summary statement(s) – legible; most important information/details evident; generally effective presentation; can follow with little difficulty	Example: – exceptional organization of ideas; exemplary use of introductions, sections/headings, conclusion(s)/summary statement(s) – easy to read; all information/details evident; very effective presentation; easy to follow
Example: – limited selection of required data – limited (no) exploration of patterns/relationships; limited use of appropriate mathematical procedures (major computational errors)	Example: – most required data selected (minor omissions) – evidence patterns/relationships explored; generally used appropriate mathematical procedures (some computational errors)	Example: – all required data selected – insightful exploration of patterns/relationships; all mathematical procedures used were appropriate (only minor computational errors)
Example: – limited evidence that the student understood the relevant mathematical concepts – limited evidence of logical reasoning that led to appropriate conclusions; missing or incorrect justification(s)/explanation(s)	Example: – evidence that the student grasped the essential mathematical concepts – evidence of logical reasoning (some minor inconsistencies) that led to appropriate conclusions; some plausible justification(s)/explanation(s)	Example: – evidence that the student understood all relevant mathematical concepts – evidence of insightful and consistent reasoning that led to appropriate conclusions; clear and logical justification(s)/ explanation(s)

Level 1	Approaching Level 2	Level 2	Approaching Level 3	Level 3

List of Assumptions

Possible Schedule and Projected Attendance

Location	Time	Performer	70% Attendance
West Auditorium	5–7 p.m.	Kathy Rhymes	572
Pioneer Hall	7–9 p.m.	Johnny and the Foot Stompers	420
Watson Stage	9–11 p.m.	Bill Smyth	146
Portage Theatre	8–10 p.m.	Icelandic Jam	154
West Auditorium	10–12 p.m.	Celtic Kings	572
Watson Stage	4–6 p.m.	C'est la Vie	146
Pioneer Hall	10–12 p.m.	Kathy Rhymes	420
		Total	**2 430**

Combined Attendance and Estimated Ticket Sales

Attendance	Estimated Ticket Sales	Projected Revenue
2 430	$8 × 2 430	$19 440

Possible Expenses

Saturday

Location	Rental Fee	Sound/Lights
West Auditorium	$1 500	$600
Pioneer Hall	$1 100	$600
Portage Theatre	$330	$600
Watson Stage	$500	$600
Total	**$3 430**	**$2 400**
Total expenses = $5 830		

Projected Performer Costs

Kathy Rhymes

Number of People	Meal Cost	Travel (km × $0.36 per km)	Accommodation Cost	Special Needs
1	2 × $50 = $100 (2 days)	1 760 × $0.36 = $633.60	2 × $50 = $100 (2 nights)	—

Johnny and the Foot Stompers

5	5 × $50 = $250	200 × $0.36 = $72.00	5 × $50 = $250	5 × $5 = $25

Bill Smyth

2	2 × $50 = $100	400 × $0.36 = $144.00	2 × $50 = $100	—

Icelandic Jam

3	3 × $50 = $150	600 × $0.36 = $216.00	3 × $50 = $150	3 × $2 = $6

Celtic Kings

5	5 × $50 = $250	540 × $0.36 = $194.40	5 × $50 = $250	—

C'est la Vie

2	2 × $50 = $100	440 × $0.36 = $158.40	2 × $50 = $100	2 × $2 = $4

Sub-Totals	**$950**	**$1 418.40**	**$950**	**$35**

Total projected costs associated with performers = $3 353.40

Profit from Clothing Sales

Expected sales:

10% of attendees buy 1 item at an average profit of $10.
(0.10 × 2 430 = 243 × $10 = $2 430)

Profit from Canteen Sales

Expected sales:

10% of attendees buy 1 item at an average profit of $0.55
(0.10 × 2 430 = 243 × $0.55 = $133.65)

Total Projected Costs for Festival

Item	Cost
Volunteer Appreciation Packages	50 × $25 = $1 250.00
Loan Repayment	$4 000.00
Venue Rental Fees	$3 430.00
Sound/Lights Rentals	4 × $600 = $2 400.00
Performer Costs	$3 353.40
Ticket Agency Fees $2 × 2 430 =	$4 860.00
Total	**$19 293.40**

Projected Revenue

Ticket Sales	$19 440.00
Clothing Sales	$2 430.00
Canteen Sales	$133.65
Total	**$22 003.65**

Projected Profit

Projected Revenue	$22 003.65
Projected Costs	$19 293.40
Projected Profit	$2 710.25

Senior 4 Consumer Mathematics (40S)
Standards Test

Written Test
Resource Package

2006

Manitoba

Building for the Future

RULER

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Manitoba Education, Citizenship and Youth,
Instruction, Curriculum and Assessment Branch,
Winnipeg, Manitoba R3E 3J5

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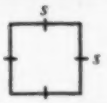
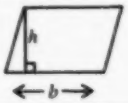
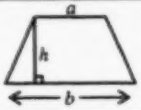
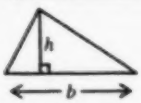
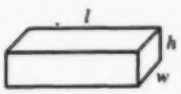
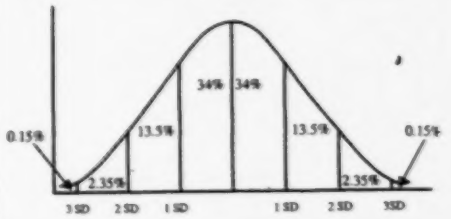
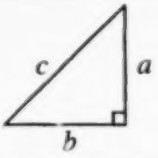
Formula List		
Name of Formula	**Diagram**	**Formula**
area of a square		$A = s^2$
area of a rectangle		$A = lw$
area of a parallelogram		$A = bh$
area of a trapezoid		$A = \frac{1}{2}(a+b)h$
area of a triangle		$A = \frac{1}{2}bh$
area of a circle		$A = \pi r^2$
surface area of a rectangular solid		$SA = 2lw + 2lh + 2wh$
volume of a rectangular solid		$V = lwh$
surface area of a sphere		$SA = 4\pi r^2$
volume of a sphere		$V = \frac{4}{3}\pi r^3$
surface area of a cone		$SA = \pi rs + \pi r^2$
volume of a cone		$V = \frac{1}{3}\pi r^2 h$
surface area of a cylinder		$SA = 2\pi rh + 2\pi r^2$
volume of a cylinder		$V = \pi r^2 h$
surface area of a pyramid		$SA = 2bs + b^2$
volume of a pyramid		$V = \frac{1}{3}b^2 h$

Formula List		
Name of Formula	**Diagram**	**Formula**
Normal Distribution		
Standard Deviation	$\sum$ = sum S = standard deviation x = observed score $\bar{x}$ = mean n = total number of observations	$S = \sqrt{\frac{\sum(x-\bar{x})^2}{n-1}}$
Percentile Rank	B = number of raw scores below the given score E = number of raw scores equal to the given score, including the given score n = total number of raw scores	$P = \left(\frac{B+0.5E}{n}\right)\times 100$
Direct Variation	y = dependent variable k = constant of variation x = independent variable	$y = kx$
Inverse Variation	y = dependent variable k = constant of variation x = independent variable	$y = \frac{k}{x}$
Partial Variation	y = dependent variable k = constant of variation x = independent variable F = fixed value	$y = kx + F$

Provincial Fuel Tax	Unleaded Gasoline: 11.5¢/L Diesel Fuel: 11.5¢/L Gasohol: 9.0¢/L Propane: 3.0¢/L Aircraft Fuel: 3.2¢/L

Tobacco Taxes	Cigarette: 17.5¢ per cigarette Carton (200 cigarettes): $35 per carton Loose tobacco: 15¢ per gram

Formula List		
Name of Formula	**Diagram**	**Formula**
Pythagorean Theorem for right triangles		$c^2 = a^2 + b^2$

Simple Interest	P = principal r = annual interest rate t = time in years I = interest	$I = Prt$
Compound Interest	A = *final amount* P = *principal* r = *annual interest rate* n = *number of times a year interest is compounded* t = *time in years*	$A = P\left(1 + \frac{r}{n}\right)^{nt}$
Gross Debt Service Ratio		$\text{GDSR} = \frac{\text{Monthly Mortgage Payment} + \text{Monthly Heating Cost} + \text{Monthly Property Taxes}}{\text{Gross Salary}} \times 100$
Debt Equity Ratio		$\text{DER} = \frac{\text{Total Liabilities} - \text{Mortgage}}{\text{Net Worth}} \times 100\ [= \%]$
Net Worth		Net Worth = Assets – Total Liabilities
Property Tax Rate		$\text{PTR} = \frac{\text{Total Revenue Required}}{\text{Total Portioned Assessment}} \times 1000\ [= \text{mills}]$

Temperature	F = degrees Fahrenheit C = degrees Celsius	$F = \frac{9}{5}C + 32$ $C = \frac{5}{9}(F - 32)$

Table 1: 10-Year Term Insurance

	Term Plus											
	Male Non-Smoker			Female Non-Smoker			Male Smoker			Female Smoker		
	Issue Rate per $1000			Issue Rate per $1000			Issue Rate per $1000			Issue Rate per $1000		
	$100 000	$250 000	$500 000	$100 000	$250 000	$500 000	$100 000	$250 000	$500 000	$100 000	$250 000	$500 000
AGE	$249 999	$499 999	$3 000 000	$249 999	$499 999	$3 000 000	$249 999	$499 999	$3 000 000	$249 999	$499 999	$3 000 000
20	0.85	0.81	0.77	0.80	0.76	0.73	1.43	1.36	1.30	1.32	1.25	1.20
21	0.85	0.81	0.77	0.80	0.76	0.73	1.43	1.36	1.30	1.32	1.25	1.20
22	0.85	0.81	0.77	0.80	0.76	0.73	1.43	1.36	1.30	1.32	1.25	1.20
23	0.85	0.81	0.77	0.80	0.76	0.73	1.43	1.36	1.30	1.32	1.25	1.20
24	0.85	0.81	0.77	0.80	0.76	0.73	1.43	1.36	1.30	1.32	1.25	1.20
25	0.85	0.81	0.77	0.80	0.76	0.73	1.43	1.36	1.30	1.32	1.25	1.20
26	0.86	0.82	0.78	0.80	0.76	0.73	1.47	1.40	1.34	1.33	1.27	1.21
27	0.87	0.83	0.79	0.80	0.76	0.73	1.52	1.44	1.39	1.34	1.28	1.22
28	0.88	0.84	0.80	0.80	0.76	0.73	1.56	1.49	1.42	1.35	1.29	1.23
29	0.89	0.85	0.81	0.80	0.76	0.73	1.61	1.53	1.46	1.36	1.30	1.24
30	0.90	0.86	0.82	0.80	0.76	0.73	1.65	1.57	1.51	1.38	1.31	1.25
31	0.96	0.91	0.87	0.86	0.82	0.78	1.78	1.69	1.62	1.47	1.40	1.34
32	1.02	0.97	0.93	0.92	0.87	0.84	1.91	1.82	1.74	1.57	1.50	1.43
33	1.08	1.03	0.98	0.98	0.93	0.89	2.05	1.95	1.86	1.67	1.58	1.52
34	1.14	1.08	1.04	1.04	0.99	0.95	2.18	2.07	1.98	1.77	1.68	1.62
35	1.20	1.14	1.09	1.10	1.05	1.00	2.31	2.20	2.10	1.87	1.78	1.71
36	1.34	1.27	1.22	1.17	1.11	1.06	2.60	2.46	2.37	2.02	1.93	1.84
37	1.48	1.41	1.35	1.24	1.18	1.13	2.88	2.74	2.62	2.18	2.07	1.98
38	1.62	1.54	1.47	1.31	1.24	1.19	3.17	3.01	2.88	2.33	2.21	2.12
39	1.76	1.67	1.60	1.38	1.31	1.26	3.45	3.28	3.15	2.49	2.37	2.27
40	1.90	1.81	1.73	1.45	1.38	1.32	3.74	3.55	3.40	2.64	2.51	2.40
41	2.06	1.96	1.87	1.56	1.48	1.42	4.22	4.02	3.84	2.90	2.76	2.64
42	2.22	2.11	2.02	1.67	1.59	1.52	4.71	4.48	4.28	3.17	3.01	2.88
43	2.38	2.26	2.17	1.78	1.69	1.62	5.19	4.93	4.73	3.43	3.26	3.12
44	2.54	2.41	2.31	1.89	1.80	1.72	5.68	5.39	5.17	3.70	3.51	3.37
45	2.70	2.57	2.46	2.00	1.90	1.82	6.16	5.85	5.61	3.96	3.76	3.61
46	3.03	2.88	2.76	2.23	2.12	2.03	6.60	6.27	6.01	4.49	4.27	4.08
47	3.36	3.19	3.06	2.46	2.34	2.24	7.04	6.69	6.40	5.02	4.76	4.57
48	3.69	3.51	3.36	2.69	2.56	2.45	7.48	7.11	6.81	5.54	5.27	5.05
49	4.02	3.82	3.66	2.92	2.77	2.66	7.92	7.52	7.21	6.07	5.76	5.52
50	4.35	4.13	3.96	3.15	2.99	2.87	8.36	7.94	7.61	6.60	6.27	6.01
51	4.88	4.64	4.44	3.40	3.23	3.09	9.26	8.80	8.43	7.24	6.88	6.59
52	5.41	5.14	4.92	3.65	3.47	3.32	10.16	9.66	9.25	7.88	7.48	7.17
53	5.94	5.64	5.41	3.90	3.71	3.55	11.07	10.52	10.07	8.51	8.09	7.74
54	6.47	6.15	5.89	4.15	3.94	3.78	11.97	11.37	10.89	9.15	8.69	8.33
55	7.00	6.65	6.37	4.40	4.18	4.00	12.87	12.23	11.72	9.79	9.31	8.91
56	7.60	7.22	6.92	4.91	4.66	4.47	13.60	12.91	12.38	10.52	9.99	9.57
57	8.20	7.79	7.46	5.42	5.15	4.93	14.32	13.61	13.04	11.24	10.68	10.23
58	8.80	8.36	8.01	5.93	5.63	5.40	15.05	14.30	13.70	11.97	11.37	10.89
59	9.40	8.93	8.55	6.44	6.12	5.86	15.77	14.98	14.36	12.69	12.06	11.55
60	10.00	9.50	9.10	6.95	6.60	6.32	16.50	15.68	15.02	13.42	12.75	12.21
61	11.60	11.02	10.56	7.86	7.47	7.15	18.70	17.77	17.02	14.87	14.12	13.53
62	13.20	12.54	12.01	8.77	8.33	7.98	20.90	19.86	19.02	16.32	15.51	14.85
63	14.80	14.06	13.47	9.68	9.20	8.81	23.10	21.95	21.02	17.78	16.89	16.18
64	16.40	15.58	14.92	10.59	10.06	9.64	25.30	24.04	23.02	19.23	18.27	17.50
65	18.00	17.10	16.38	11.50	10.93	10.47	27.50	26.13	25.03	20.68	19.65	18.82
66	19.60	18.62	17.84	12.41	11.79	11.29	29.70	28.22	27.03	22.13	21.02	20.14
67	21.10	21.14	19.29	13.32	12.65	12.12	31.90	30.31	29.03	23.58	22.41	21.46
68	22.80	21.66	20.75	14.23	13.52	12.95	34.10	32.40	31.03	25.04	23.78	22.78
69	24.40	23.18	22.20	15.14	14.38	13.78	36.30	34.49	33.03	26.49	25.17	24.10
70	26.00	24.70	23.66	16.05	15.25	14.61	38.50	36.58	35.04	27.94	26.54	25.42
71	27.60	26.22	25.12	16.96	16.11	15.43	40.70	38.67	37.04	29.39	27.92	26.75
72	29.20	27.74	26.57	17.87	16.98	16.26	42.90	40.76	39.04	30.84	29.30	28.07
73	30.80	29.26	28.03	18.78	17.84	17.09	45.10	42.85	41.04	32.30	30.68	29.39
74	32.40	30.78	29.48	19.69	18.71	17.92	47.30	44.94	43.04	33.75	32.07	30.71

Add policy fee of $75 per year
Semi-annual payment (multiply annual premium by 0.52)
Monthly payment (multiply annual premium by 0.09)

Table 2: Whole-Life Insurance

WHOLE-LIFE

Issue Age	Male Non-Smoker Issue Rate Per $1000 Premium Rate	Female Non-Smoker Issue Rate Per $1000 Premium Rate	Male Smoker Issue Rate Per $1000 Premium Rate	Female Smoker Issue Rate Per $1000 Premium Rate	Issue Age
18	3.50	2.82	4.31	3.13	18
19	3.54	2.85	4.41	3.20	19
20	3.60	2.89	4.51	3.26	20
21	3.96	3.04	4.72	3.44	21
22	4.07	3.20	4.93	3.62	22
23	4.17	3.35	5.15	3.81	23
24	4.28	3.51	5.36	3.99	24
25	4.38	3.66	5.57	4.17	25
26	4.61	3.86	5.88	4.41	26
27	4.82	4.05	6.19	4.66	27
28	5.05	4.25	6.49	4.90	28
29	5.26	4.44	6.80	5.15	29
30	5.46	4.64	7.11	5.39	30
31	5.76	4.90	7.56	5.72	31
32	6.03	5.16	8.01	6.04	32
33	6.30	5.41	8.45	6.37	33
34	6.59	5.67	8.90	6.69	34
35	7.11	5.93	9.35	7.02	35
36	7.32	6.31	10.04	7.50	36
37	7.78	6.70	10.74	7.98	37
38	8.25	7.08	11.43	8.47	38
39	8.71	7.47	12.13	8.95	39
40	9.28	7.85	12.82	9.43	40
41	9.75	8.42	13.86	10.14	41
42	10.32	8.99	14.90	10.85	42
43	10.90	9.55	15.95	11.55	43
44	11.48	10.12	16.99	12.26	44
45	12.40	10.69	18.03	12.97	45
46	12.81	11.21	19.15	13.68	46
47	13.55	11.73	20.28	14.38	47
48	14.28	12.26	21.38	15.09	48
49	15.02	12.78	22.49	15.79	49
50	16.34	13.30	23.61	16.50	50
51	16.70	14.03	25.06	17.44	51
52	17.63	14.76	26.52	18.38	52
53	18.56	15.49	27.97	19.32	53
54	19.51	16.22	29.43	20.26	54
55	21.15	16.95	30.88	21.20	55
56	21.79	17.93	32.73	22.39	56
57	23.17	18.91	34.57	23.58	57
58	24.53	19.89	36.42	24.78	58
59	25.89	20.87	38.26	25.97	59
60	27.70	21.85	40.11	27.16	60
61	29.32	23.21	42.40	28.71	61
62	31.39	24.57	44.70	30.25	62
63	33.45	25.93	46.99	31.80	63
64	35.52	27.29	49.29	33.34	64
65	37.58	28.65	51.58	34.89	65
66	39.73	30.08	54.48	36.29	66
67	41.95	31.59	56.60	37.74	67
68	44.33	33.17	58.81	39.25	68
69	46.83	34.82	61.12	40.82	69
70	49.45	36.57	63.51	42.45	70
71	52.22	38.39	65.96	44.15	71
72	55.15	40.31	68.56	45.91	72
73	58.23	42.33	71.23	47.75	73
74	61.50	44.45	74.01	49.66	74
75	64.94	46.67	76.89	51.65	75

Issue Age	Male Under 18 Issue Rate Per $1000 Premium Rate	Female Under 18 Issue Rate Per $1000 Premium Rate	Issue Age
0	1.75	1.53	0
1	1.78	1.56	1
2	1.80	1.59	2
3	1.89	1.63	3
4	1.98	1.67	4
5	2.05	1.71	5
6	2.12	1.75	6
7	2.24	1.82	7
8	2.35	1.89	8
9	2.47	1.97	9
10	2.58	2.05	10
11	2.71	2.16	11
12	2.83	2.27	12
13	3.01	2.34	13
14	3.19	2.41	14
15	3.31	2.50	15
16	3.42	2.58	16
17	3.48	2.68	17

Add policy fee of $75.00 per year.

Semi-annual payment (multiply annual premium by 0.52)
Monthly payment (multiply annual premium by 0.09)

Table 3: Cash Surrender Values

WHOLE-LIFE

MALE Cash Surrender Value per $1000 of Sum Assured — Issue Age											Policy	FEMALE Cash Surrender Value per $1000 of Sum Assured — Issue Age										
20	25	30	35	40	45	50	55	60	65	70	Year	20	25	30	35	40	45	50	55	60	65	70
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
1	1	1	2	3	5	7	9	11	15	18	4	1	1	1	1	2	4	5	7	9	12	16
2	3	4	6	8	14	18	23	28	35	41	5	1	2	3	5	7	11	14	19	24	30	37
4	6	8	11	14	23	29	36	44	54	64	6	3	4	6	8	11	18	23	30	38	48	58
6	8	11	15	20	32	40	50	61	74	87	7	4	6	9	12	16	25	33	42	52	65	79
7	10	14	19	25	40	51	64	78	94	110	8	6	8	11	15	20	32	42	53	67	83	100
8	13	18	24	30	49	62	77	94	113	133	9	7	10	14	19	24	40	51	65	81	100	121
10	15	21	28	36	58	73	91	111	133	156	10	9	12	16	22	29	47	60	76	95	118	142
14	21	29	38	52	91	109	130	152	175	201	11	12	17	23	30	42	75	91	111	133	158	186
17	27	37	48	68	124	145	168	193	218	245	12	15	22	29	38	55	103	122	146	171	199	231
21	34	44	58	83	157	181	207	234	260	290	13	18	27	36	46	68	131	154	181	208	239	275
24	40	52	68	99	190	217	246	275	303	335	14	20	32	42	55	81	160	185	216	246	280	319
28	46	60	78	115	223	252	284	316	345	380	15	23	37	49	63	94	188	216	251	284	320	364
33	54	73	94	141	256	288	323	356	387	424	16	28	44	59	76	116	216	247	285	321	361	408
39	62	86	110	167	289	324	362	397	430	469	17	32	50	70	89	138	244	278	320	359	401	453
44	69	99	126	193	322	360	401	438	472	514	18	37	56	80	103	159	273	310	355	397	442	497
50	77	112	142	219	355	396	439	479	515	558	19	41	63	91	116	181	301	341	390	434	482	542
55	85	125	158	245	388	432	478	520	557	603	20	46	69	102	129	203	329	372	425	472	523	586
63	96	140	181	284	405	451	499	544	587	626	21	52	78	114	149	237	348	393	448	498	555	627
71	107	154	204	324	423	470	520	568	616	650	22	59	87	126	168	272	367	414	471	525	587	669
78	117	169	226	363	440	489	541	592	645	673	23	65	96	138	188	306	387	435	494	551	618	710
86	128	183	249	403	458	508	562	616	675	698	24	71	105	151	207	341	406	456	517	578	650	752
94	139	198	272	442	475	527	582	640	705	726	25	78	114	163	226	375	425	477	540	604	682	793
105	154	217	312	458	493	546	603	664	734	756	26	87	126	179	262	393	444	498	563	630	714	834
116	168	236	353	474	510	565	624	688	764	794	27	96	139	195	297	411	463	519	586	657	746	876
127	183	254	393	490	528	583	645	712	793	841	28	105	151	212	332	429	482	539	609	683	777	917
138	197	273	434	506	545	602	666	736	823	906	29	114	163	228	367	446	502	560	632	710	809	959
149	212	292	474	522	563	621	687	760	852	1000	30	124	176	244	402	464	521	581	655	736	841	1000
164	231	333	489	538	580	640	708	784	882	-	31	136	192	276	419	482	540	602	678	762	873	-
179	250	374	504	554	598	659	729	808	911	-	32	149	209	308	436	500	559	623	701	789	905	-
193	269	415	519	570	615	678	749	832	941	-	33	161	225	340	453	518	578	644	724	815	936	-
208	288	456	534	585	633	697	770	856	970	-	34	174	241	372	470	536	597	665	747	842	968	-
223	307	497	549	601	650	716	791	880	1000	-	35	186	258	404	487	554	617	686	770	868	1000	-
242	348	511	564	617	668	735	812	904	-	-	36	202	287	421	505	571	636	707	798	894	-	-
261	389	526	579	633	685	754	833	928	-	-	37	219	316	438	522	589	655	728	816	921	-	-
280	429	540	594	649	703	773	854	952	-	-	38	235	345	455	539	607	674	749	839	947	-	-
299	470	554	609	665	720	792	875	976	-	-	39	252	375	472	556	625	693	770	862	974	-	-
318	511	569	624	681	738	811	896	1000	-	-	40	268	404	489	573	643	712	791	885	1000	-	-
357	525	583	639	697	755	830	916	-	-	-	41	295	421	506	590	661	732	812	908	-	-	-
395	539	598	654	713	773	849	937	-	-	-	42	322	436	523	607	679	751	833	931	-	-	-
434	553	612	669	729	790	867	958	-	-	-	43	350	455	540	624	696	770	853	954	-	-	-
472	567	626	684	745	808	886	979	-	-	-	44	377	472	557	641	714	789	874	977	-	-	-
511	581	641	699	761	825	905	1000	-	-	-	45	404	489	574	658	732	808	895	1000	-	-	-
525	595	655	714	777	843	924	-	-	-	-	46	421	506	591	675	750	827	916	-	-	-	-
539	609	669	729	793	860	943	-	-	-	-	47	438	523	608	692	768	847	937	-	-	-	-
553	623	684	745	809	878	962	-	-	-	-	48	455	540	625	710	786	866	958	-	-	-	-
567	637	698	760	825	895	981	-	-	-	-	49	472	557	642	727	804	885	979	-	-	-	-
581	651	713	775	841	913	1000	-	-	-	-	50	489	574	659	744	821	904	1000	-	-	-	-
595	665	727	790	857	930	-	-	-	-	-	51	506	591	676	761	839	923	-	-	-	-	-
609	679	741	805	872	948	-	-	-	-	-	52	523	608	693	778	857	942	-	-	-	-	-
623	693	756	820	888	965	-	-	-	-	-	53	540	625	711	795	875	962	-	-	-	-	-
637	707	770	835	904	983	-	-	-	-	-	54	557	642	728	812	893	981	-	-	-	-	-
651	721	784	850	920	1000	-	-	-	-	-	55	574	659	745	829	911	1000	-	-	-	-	-
665	735	799	865	936	-	-	-	-	-	-	56	591	676	762	846	929	-	-	-	-	-	-
679	749	813	880	952	-	-	-	-	-	-	57	608	693	779	863	946	-	-	-	-	-	-
693	762	828	895	968	-	-	-	-	-	-	58	625	711	796	880	964	-	-	-	-	-	-
707	776	842	910	984	-	-	-	-	-	-	59	642	728	813	897	982	-	-	-	-	-	-
721	790	856	925	1000	-	-	-	-	-	-	60	659	745	830	915	1000	-	-	-	-	-	-
735	804	871	940	-	-	-	-	-	-	-	61	676	762	847	932	-	-	-	-	-	-	-
749	818	885	955	-	-	-	-	-	-	-	62	693	779	864	949	-	-	-	-	-	-	-
762	832	899	970	-	-	-	-	-	-	-	63	711	796	881	966	-	-	-	-	-	-	-
776	846	914	985	-	-	-	-	-	-	-	64	728	813	898	983	-	-	-	-	-	-	-
790	860	928	1000	-	-	-	-	-	-	-	65	745	830	915	1000	-	-	-	-	-	-	-
804	874	943	-	-	-	-	-	-	-	-	66	762	847	932	-	-	-	-	-	-	-	-
818	888	957	-	-	-	-	-	-	-	-	67	779	864	949	-	-	-	-	-	-	-	-
832	902	971	-	-	-	-	-	-	-	-	68	796	881	966	-	-	-	-	-	-	-	-
846	916	986	-	-	-	-	-	-	-	-	69	813	898	983	-	-	-	-	-	-	-	-
860	930	1000	-	-	-	-	-	-	-	-	70	830	915	1000	-	-	-	-	-	-	-	-
874	944	-	-	-	-	-	-	-	-	-	71	847	932	-	-	-	-	-	-	-	-	-
888	958	-	-	-	-	-	-	-	-	-	72	864	949	-	-	-	-	-	-	-	-	-
902	972	-	-	-	-	-	-	-	-	-	73	881	966	-	-	-	-	-	-	-	-	-
916	986	-	-	-	-	-	-	-	-	-	74	898	983	-	-	-	-	-	-	-	-	-
930	1000	-	-	-	-	-	-	-	-	-	75	915	1000	-	-	-	-	-	-	-	-	-
944	-	-	-	-	-	-	-	-	-	-	76	932	-	-	-	-	-	-	-	-	-	-
958	-	-	-	-	-	-	-	-	-	-	77	949	-	-	-	-	-	-	-	-	-	-
972	-	-	-	-	-	-	-	-	-	-	78	966	-	-	-	-	-	-	-	-	-	-
986	-	-	-	-	-	-	-	-	-	-	79	983	-	-	-	-	-	-	-	-	-	-
1000	-	-	-	-	-	-	-	-	-	-	80	1000	-	-	-	-	-	-	-	-	-	-

Every effort has been made to ensure the accuracy of the above values, but accuracy is not guaranteed. In the event of a discrepancy, the insurance policy governs.

Table 4: Tenant's Package Policy

Tenant's Package Policy ($500 deductible)		
All Areas – Manitoba		
Coverage Amount	**Standard Form**	**Comprehensive Form**
$25 000	$158.00	$200.00
$30 000	$174.00	$226.00
$35 000	$199.00	$252.00
$40 000	$212.00	$269.00
$45 000	$235.00	$298.00
$50 000	$254.00	$324.00
$55 000	$272.00	$346.00
$60 000	$293.00	$373.00
$65 000	$315.00	$400.00
$70 000	$337.00	$427.00
$75 000	$359.00	$454.00
Each additional $1000	$4.50	$5.50

$200 deductible – Increase premium by 10%

Table 5: Manitoba Homeowner's Insurance Rates

Manitoba Homeowner's Insurance Rates ($500 deductible)								
	Metro Winnipeg		Area 2		Area 3		Area 4	
Amount	Standard	Comprehensive	Standard	Comprehensive	Standard	Comprehensive	Standard	Comprehensive
$ 50 000	195	214	147	161	196	216	261	287
$ 55 000	216	238	160	176	217	239	289	318
$ 60 000	237	260	173	190	237	261	315	347
$ 65 000	252	277	187	205	255	281	339	373
$ 70 000	266	303	200	220	270	297	359	395
$ 75 000	294	314	210	231	285	314	379	417
$ 80 000	310	323	221	243	302	332	402	462
$ 85 000	318	333	226	249	313	344	416	458
$ 90 000	324	349	231	254	324	356	431	474
$ 95 000	348	370	244	268	345	380	459	505
$100 000	364	393	260	286	361	397	480	528
$105 000	390	417	278	306	378	416	503	553
$110 000	402	441	293	322	393	432	523	575
$115 000	418	464	299	329	409	450	544	598
$120 000	436	487	309	340	424	466	564	620
$125 000	451	510	319	351	444	488	591	650
$130 000	472	543	339	373	466	513	620	682
$135 000	498	557	345	380	477	525	634	697
$140 000	523	580	358	394	496	546	660	726
$145 000	538	596	375	413	508	559	676	744
$150 000	550	604	385	424	520	572	692	761
$155 000	557	613	398	438	551	606	733	806
$160 000	565	622	413	454	569	626	757	833
$165 000	572	629	425	468	589	648	783	861
$170 000	590	647	441	485	609	670	810	891
$175 000	607	668	451	496	624	686	830	913
$180 000	620	686	466	513	648	713	862	948
$185 000	636	702	478	526	667	734	887	976
$190 000	652	717	492	541	705	776	938	1032
$195 000	678	742	504	554	720	792	958	1054
$200 000	692	771	519	571	726	799	966	1063
Additional Amounts per $1000 coverage	Add: $3.15	Add: $3.50	Add: $2.75	Add: $3.03	Add: $3.55	Add: $3.91	Add: $4.72	Add: $5.19

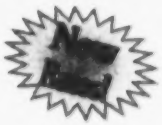
$200 deductible – Increase premium by 10%

Table 6: Amortization Period of Mortgage Loan When Paid Monthly

Amortization Period of Mortgage Loan (Blended payment of principal and interest per $1000 of loan)					
Interest Rate	**5 years**	**10 years**	**15 years**	**20 years**	**25 years**
4.00%	$18.40	$10.11	$7.38	$6.04	$5.26
4.25%	18.51	10.23	7.50	6.17	5.40
4.50%	18.62	10.34	7.63	6.30	5.53
4.75%	18.74	10.46	7.75	6.44	5.67
5.00%	18.85	10.58	7.88	6.57	5.82
5.25%	18.96	10.70	8.01	6.71	5.96
5.50%	19.07	10.82	8.14	6.84	6.10
5.75%	19.19	10.94	8.27	6.98	6.25
6.00%	19.30	11.07	8.40	7.12	6.40
6.25%	19.41	11.19	8.53	7.26	6.55
6.50%	19.53	11.31	8.66	7.41	6.70
6.75%	19.64	11.43	8.80	7.55	6.85
7.00%	19.75	11.56	8.93	7.70	7.00
7.25%	19.87	11.68	9.07	7.84	7.16
7.50%	19.98	11.81	9.21	7.99	7.32
7.75%	20.10	11.94	9.34	8.13	7.47
8.00%	20.21	12.06	9.48	8.28	7.63
8.25%	20.33	12.19	9.62	8.43	7.79
8.50%	20.45	12.32	9.76	8.59	7.95
8.75%	20.56	12.45	9.90	8.74	8.12
9.00%	20.68	12.58	10.05	8.89	8.28
9.25%	20.80	12.71	10.19	9.05	8.44
9.50%	20.91	12.84	10.33	9.20	8.61
9.75%	21.03	12.97	10.48	9.36	8.78
10.00%	21.15	13.10	10.62	9.52	8.94
10.25%	21.27	13.24	10.77	9.68	9.11
10.50%	21.38	13.37	10.92	9.84	9.28
10.75%	21.50	13.50	11.06	9.99	9.45
11.00%	21.62	13.64	11.21	10.16	9.63
11.25%	21.74	13.77	11.36	10.32	9.80
11.50%	21.86	13.91	11.51	10.48	9.97
11.75%	21.98	14.04	11.66	10.65	10.14
12.00%	22.10	14.18	11.82	10.81	10.32
12.25%	22.22	14.32	11.97	10.98	10.49
12.50%	22.34	14.46	12.12	11.14	10.67
12.75%	22.46	14.59	12.28	11.31	10.85
13.00%	22.58	14.73	12.43	11.48	11.02
13.25%	22.70	14.87	12.59	11.64	11.20
13.50%	22.82	15.01	12.74	11.81	11.38
13.75%	22.94	15.15	12.90	11.98	11.56
14.00%	23.07	15.29	13.06	12.15	11.74
14.25%	23.19	15.43	13.21	12.32	11.92
14.50%	23.31	15.58	13.37	12.49	12.10
14.75%	23.43	15.72	13.53	12.67	12.28
15.00%	23.56	15.86	13.69	12.84	12.46
15.25%	23.68	16.00	13.85	13.01	12.64
15.50%	23.80	16.15	14.01	13.18	12.83
15.75%	23.92	16.29	14.17	13.36	13.01
16.00%	24.05	16.44	14.33	13.53	13.19

*** Interest compounded semi-annually. Actual payment amount may differ slightly.**

Table 7: Canadian Dollar-Based Rates



Canadian Dollar Based Rates (CAN $)			
Bank Buying Rate	**Country**	**Currency**	**Bank Selling Rate**
0.9231	Australia	Dollar (AUD)	0.9926
1.4739	Austria	Euro	1.5399
0.4774	Brazil	Real	0.5389
0.1426	China	Yuan	0.1641
0.1902	Croatia	Kuna	0.2273
0.1953	Denmark	Krone (DKK)	0.2105
2.2164	England	Pound	2.3075
1.4739	France	Euro	1.5399
1.4739	Germany	Euro	1.5399
0.1500	Hong Kong	Dollar (HKD)	0.1669
0.0058	Hungary	Forint	0.0064
1.4739	Italy	Euro	1.5399
0.0111	Japan	Yen	0.0117
0.1114	Mexico	Peso	0.1196
2.1946	N. Ireland	Pound	2.3302
0.8540	New Zealand	Dollar (NZD)	0.9213
0.1824	Norway	Krone (NOK)	0.1987
0.3223	Saudi Arabia	Riyal	0.3482
2.1946	Scotland	Pound	2.3302
0.7138	Singapore	Dollar (SGD)	0.7890
0.1690	South Africa	Rand	0.2037
0.1579	Sweden	Krone (SEK)	0.1691
0.9529	Switzerland	Franc (CHF)	1.0121
0.0284	Thailand	Baht	0.0329
1.2232	United States	Dollar (USD)	1.2542

As of Wednesday, June 15, 2005. Courtesy of Custom House Global Exchange.

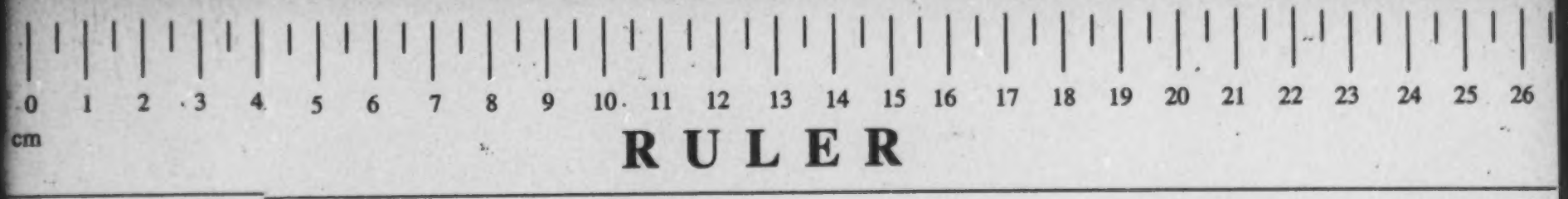
Note:
1. The following 12 countries all use the "Euro" as their currency: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain.

2. The following countries use the "Pound " as their currency (England, N. Ireland, Scotland and Wales).

Table 8: Customs Duties and Excise Taxes

	Group	Custom Duties	Excise Taxes
Costume Jewellery	NAFTA[1]	0%	10% > $3.00 per item
	MFN[2]	8.5%	10% > $3.00 per item
	GP[3]	0%	0%
Tableclothes (flax)	NAFTA	0%	0%
	MFN	10%	0%
	GP	0%	0%
Wristwatches	NAFTA	0%	10% > $50.00 per item
	MFN	5%	10% > $50.00 per item
	GP	4%	10% > $50.00 per item
Precious Jewellery	NAFTA	0%	10%
	MFN	5.5%	10%
	GP	4%	10%
Foot Gear	NAFTA	0%	0%
	MFN	20%	0%
	GP	8%	0%
Plastic Trays	NAFTA	0%	0%
	MFN	10.5%	0%
	GP	6%	0%
Jeans	NAFTA	0%	0%
	MFN	20%	0%
	GP	0%	0%
Metal Beds	NAFTA	0%	0%
	MFN	8%	0%
	GP	5%	0%
House Paint	NAFTA	0%	0%
	MFN	6.5%	0%
	GP	3%	0%
Cars	NAFTA	0%	$100.00 for air conditioning
	MFN	6.7%	$100.00 for air conditioning
	GP	6%	$100.00 for air conditioning

1 Trade agreement for "duty free" goods from U.S.A. and Mexico.
2 Most Favoured Nation includes most countries not listed under NAFTA and GP.
3 General Preferential (GP) status entitles China, India and many Latin American countries special lower rates for custom duties.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RULER

13355

Senior 4 Consumer Mathematics (40S)
Standards Test

Written Test
Student Booklet

January 2006

Manitoba
Building for the Future

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Instruction, Curriculum and Assessment Branch,
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Senior 4 Consumer Mathematics (40S)
Standards Test—January 2006
Written Test Student Booklet

DESCRIPTION

Total Possible Marks: 39 **Maximum Time: 90 minutes**

This component of the test consists of six parts:

Learning Unit	Suggested Time to Complete	Marks
Personal Finance	10–15 minutes	7.5
Government Finances	10–15 minutes	7.5
Statistics	10–15 minutes	7.5
Variation and Formulas	10–15 minutes	7
Investments	10–15 minutes	7
Design and Measurement	10–15 minutes	2.5

GENERAL DIRECTIONS

- You may use the resource package containing formulas and tables.
- Use of a scientific calculator and ruler may be necessary. Graphing calculators are not permitted.
- Read all instructions on the test carefully.
- **If you need more space to answer a question, extra pages may be provided by your teacher. Write your booklet ID number and question number on any extra page(s) used and staple the additional pages into the booklet where your answer begins.**

Remember to:

- show all your work in this booklet;
- use your resource package;
- use a scientific (non-graphing) calculator; and
- use a ruler.

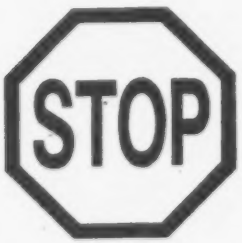
DIRECTIONS

- Show **complete answers** in the space(s) provided in your student booklet.
- Let the mark values for each question guide you in answering the question.
- Show all your work.
- Be sure to include units in your final answer.
- Use your resource package.
- Provide explanations and justifications.
- Use a well-organized method to communicate your answer.

Directing Words

Some questions may include directing words such as *explain, illustrate,* and *calculate.* These words are explained below.

The Word	The question is asking for…
identify/list/name/state	a label or title of an item, concept or method
defend/justify/support	an explanation, information, or evidence that shows why your method, idea or answer is good
describe/explain/express	words or symbols, diagrams, a chart or graph, or other methods that **clearly show** what you mean or what you are thinking
illustrate/sketch	a reasonably neat picture or diagram (not necessarily to scale) that shows or explains an idea or method
draw	a diagram to scale or graph that shows or explains an idea or method
calculate/convert /determine/find	a mathematical formula or algebraic equation or numerical calculation to solve a problem
plot	placement of a point or points on a graph



PLEASE WAIT UNTIL THE TEACHER TELLS YOU TO TURN THE PAGE.

Personal Finance

DO NOT USE

1.5 Marks

1. Bill Smith wishes to insure the contents of his apartment. His contents are valued at $35 000. Calculate Bill's yearly premium for standard form coverage with a $200 deductible. 115

DO NOT USE

2.5 Marks

2. John Dion decides to buy a house for $38 000. He makes a down payment of 5% of the purchase price of the house. The mortgage is amortized over 15 years at a rate of 4.25%. John makes monthly mortgage payments. Calculate the total amount of the mortgage payments he makes in one year. 116

1.5 Marks

3. A couple earning $4 500 a month (combined gross salary) is considering a mortgage payment of $860 a month. Property taxes would be $220 per month. Calculate the maximum they can afford to pay for heating when their Gross Debt Service Ratio (GDSR) is 32%. 117

DO NOT USE

2 Marks

4. In the table below, list and describe two initial costs (excluding the purchase price) that a person may have to pay when purchasing a home. 118

	INITIAL COST	DESCRIPTION
1.		
2.		

DO NOT USE

Government Finances

1.5 Marks

5. The following revenues were collected by the town of Jamesville for the year 2002. Calculate the percent of revenue collected in government grants. 119

Business taxes	$ 600 000
Government grants	$ 780 000
Permits, sale of goods	$ 80 000
Property taxes	$ 1 900 000
Transfers	$ 140 000
Other taxes	$ 500 000

2.5 Marks

6. A Brandon car dealership is importing five cars from Germany (MFN). Each car is worth $50 000 Canadian.

A) Calculate the custom duties paid when importing these five cars. (1.5 marks) 120

B) Calculate the cost of one car in euros. (1 mark) 121

DO NOT USE

1 Mark

7. Leanne spent a year as an exchange student in Japan. Prior to leaving Canada she bought 180 000 yen. While in Japan, Leanne spent 150 000 yen. Calculate how much she spent in Canadian dollars. 122

A) $1 665.00
B) $1 755.00
C) $12 820 512.82
D) $13 513 513.51

Answer: _____

2.5 Marks

8. A municipality needs to raise $75 900 in taxes. The total portioned assessed value of the properties in this municipality is $3 000 000.

A) Calculate the property tax rate in mills for the municipality. (1 mark) 123

B) Calculate the amount of tax revenues generated from a property worth $80 000, if the portioned percentage is 45%. (1.5 marks) 124

Statistics

DO NOT USE

2.5 Marks

9. Judges for a talent show auditioned 1 200 people and scored their performances. Dave scored 87% for his performance. Nine other contestants scored 87%. A total of 805 contestants scored lower than Dave.

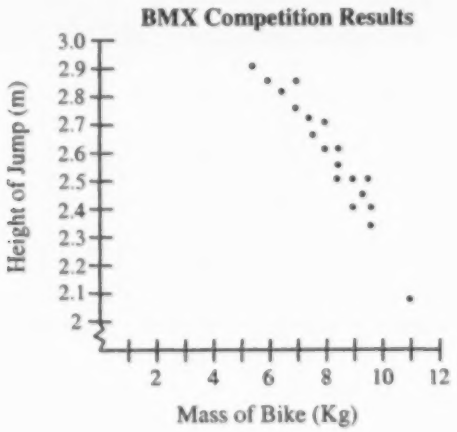
A) Find Dave's percentile rank. (1.5 marks) 125

B) Dave's friend, Tim, is the only person with a percentile rank of 90. The talent show uses the top 10 scores to determine the finalists. Determine whether Tim is a finalist and explain your answer. (1 mark) 126

DO NOT USE

2 Marks

10. The scatter plot below shows the relationship between the mass of a BMX bike and the height the bike can jump.



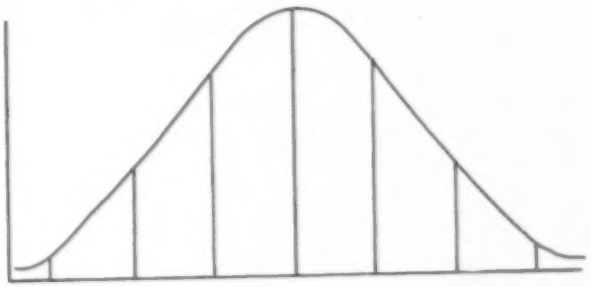
A) Identify the type and strength of the correlation that exists between the mass of a bike and the height of a jump. (1 mark) 127

B) Describe the relationship between the mass of a bike and the height of a jump. (1 mark) 128

DO NOT USE

1.5 Marks

11. A manufacturer produces televisions with an expected service-life that follows a normal distribution. The mean service-life is 13 years and the standard deviation is 1.5 years.



A) Find the percent of televisions that last fewer than 10 years. (0.5 mark) 129

B) If 22 000 televisions are manufactured in a particular year, find the number of televisions with a life expectancy greater than 11.5 years. (1 mark) 130

DO NOT USE

1.5 Marks

12. Margo marked ten Consumer Mathematics (40S) tests last night.

Scores		
15	-24	576
18	-21	441
20	-19	361
22	-17	289
25	-14	196
34	-5	25
36	-3	9
66	27	729
74	35	1 225
80	41	1 681
Sum of squares $\sum(x - \bar{x})^2$		5 532

Use the above data to calculate the standard deviation. (1.5 marks)

131

DO NOT USE

1.5 Marks

12. Margo marked ten Consumer Mathematics (40S) tests last night.

Scores		
x	$x - \bar{x}$	$(x - \bar{x})^2$
15	-24	576
18	-21	441
20	-19	361
22	-17	289
25	-14	196
34	-5	25
36	-3	9
66	27	729
74	35	1 225
80	41	1 681
Sum of squares $\sum (x - \bar{x})^2$		5 532

Use the above data to calculate the standard deviation. (1.5 marks)

131

Variation and Formulas

DO NOT USE

1 Mark

13. Which one of the following choices represents a direct variation? 132

A) $y = 4x^2 + 3$

B) $xy = 4$

C) $y = 4$

D) $y = 4x$

Answer: _____

3 Marks

14. The Acme Advertising Company has the following rates:

- A fixed cost of $500 to write and design an advertising flyer
- A cost of $0.15 to print each flyer

A) Write the partial variation equation that relates the total cost (c) to the number of flyers printed (p). (1 mark) 133

B) Calculate the total cost of producing 60 000 flyers. (1 mark) 134

C) Determine how many flyers can be produced for a total cost of $12 500. (1 mark) 135

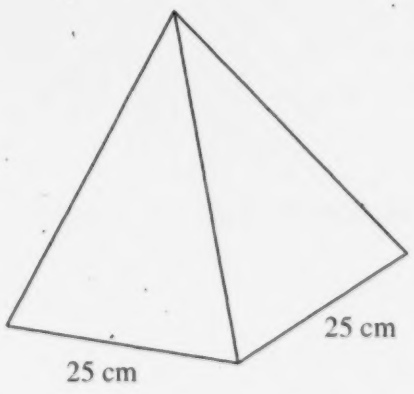
DO NOT USE

1.5 Marks

15. The cost of oil varies directly with the number of litres purchased. The cost of 15 litres of oil is $22.50. Determine the cost (in dollars) of 350 litres of oil. 136

1.5 Marks

16. Billy has made a sand castle shaped like a square pyramid. Calculate the volume of sand in the castle if the castle is 36 cm high. 137



DO NOT USE

Investments

4 Marks

17. Rem purchased 1 000 shares of Wartel at $7.50 per share. The commission for buying shares is 7% of the current price.

A) Calculate the total purchase price of the shares. (1.5 marks) 138

B) Six months later Rem sold the shares for $8.50 per share. The commission to sell is 7% of the current price. Calculate the amount Rem will receive after selling his stocks. (1.5 marks) 139

C) Calculate Rem's gain or loss on the stock transaction. (1 mark) 140

DO NOT USE

2 Marks

18. Thor wants to invest $3 000 for a 6-month period of time. List one advantage and one disadvantage for each investment option. Refer to either liquidity, risk or rate of return in your answer. 141

	Advantage	**Disadvantage**
G.I.C.		
Stocks		

DO NOT USE

1 Mark

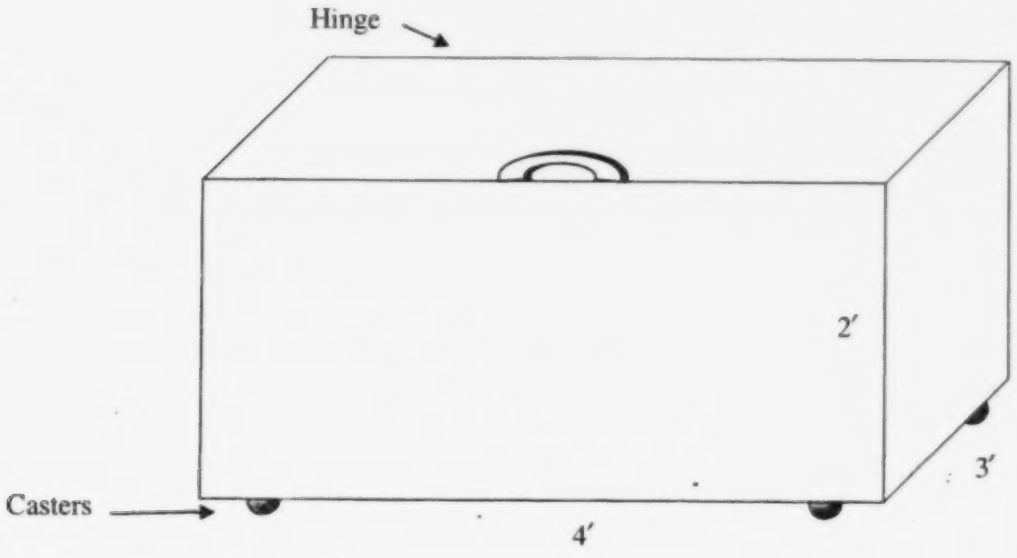
19. Juan is considering investing $50 per month in a registered savings plan. Identify two advantages of registered savings plans that Juan should consider. 142

DO NOT USE

Design and Measurement

2.5 Marks

20. Zhinous is building a toy box for her nephew (see diagram).



A) Determine the number of sheets of $4' \times 8'$ plywood needed to build the toy box. (1 mark) 143

(continued on next page)

DO NOT USE

B) Calculate the number of square feet of plywood wasted. (0.5 mark) 144

C) If the cost of a $4' \times 8'$ sheet of plywood is \$38.53, calculate the cost of the wasted plywood. (1 mark) 145

Senior 4 Consumer Mathematics (40S)
Standards Test

Written Test
Marking Guide

January 2006

Manitoba

Building for the Future

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Manitoba Education, Citizenship and Youth,
Instruction, Curriculum and Assessment Branch,
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Marking Guidelines

The marking guide for the Written Test for the Senior 4 Consumer Mathematics (40S) Standards Test is based on the outcomes and standards found in the *Senior 4 Mathematics: Outcomes and Standards* document (2004).

The recommended procedure for scoring student responses is as follows:

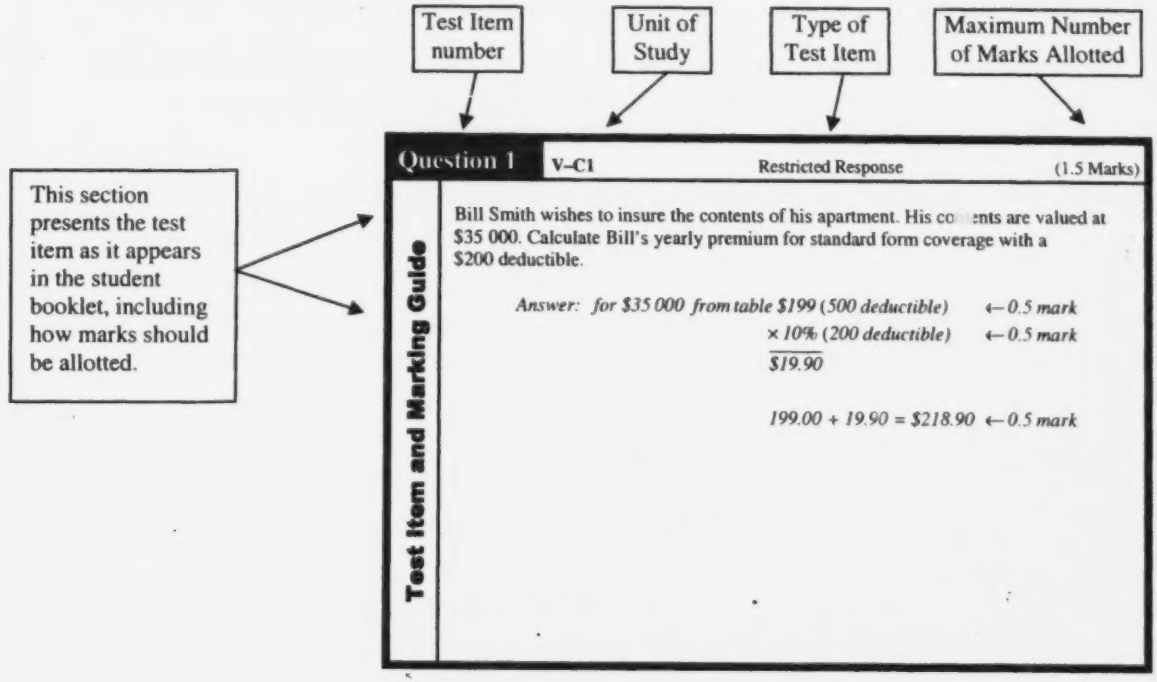
1. Read the *Written Test Marking Guide*.
2. Study the student samples provided and the rationales for the allotted scores.
3. Determine the mark for the student's response by comparing its features with the *Written Test Marking Guide* descriptions. The descriptions and samples only typify a student's response to a given question; an exact match is not anticipated.

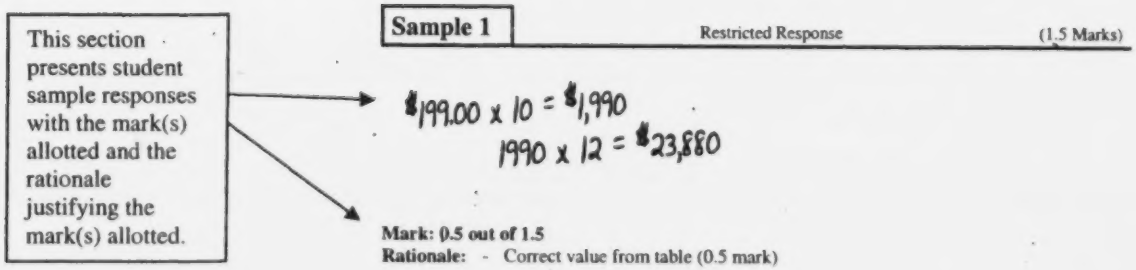
Irregularities in Standards Tests

During the administration of standards tests, supervising teachers may encounter irregularities. Markers may also encounter irregularities during local marking sessions. Appendix A provides examples of such irregularities as well as procedures to follow to report irregularities.

Presentation of the Student Samples

Each constructed-response question is presented using the following sections:


Test Item number
Unit of Study
Type of Test Item
Maximum Number of Marks Allotted
This section presents the test item as it appears in the student booklet, including how marks should be allotted.
Question 1
V–C1
Restricted Response
(1.5 Marks)
Test Item and Marking Guide
Bill Smith wishes to insure the contents of his apartment. His co ents are valued at $35 000. Calculate Bill's yearly premium for standard form coverage with a $200 deductible.
Answer: for $35 000 from table $199 (500 deductible) ← 0.5 mark
× 10% (200 deductible) ← 0.5 mark
$19.90
199.00 + 19.90 = $218.90 ← 0.5 mark


This section presents student sample responses with the mark(s) allotted and the rationale justifying the mark(s) allotted.
Sample 1
Restricted Response
(1.5 Marks)
$199.00 x 10 = $1,990
1990 x 12 = $23,880
Mark: 0.5 out of 1.5
Rationale: - Correct value from table (0.5 mark)

Personal Finance

Question 1 | **V–C1** | Restricted Response | (1.5 Marks)

Test Item and Marking Guide

Bill Smith wishes to insure the contents of his apartment. His contents are valued at $35 000. Calculate Bill's yearly premium for standard form coverage with a $200 deductible.

Answer: for $35 000 from table $199 (500 deductible) ← *0.5 mark*
× 10% (200 deductible) ← *0.5 mark*
$19.90

199.00 + 19.90 = $218.90 ← *0.5 mark*

Sample 1 | Restricted Response | (1.5 Marks)

$199.00 x 10 = $1,990
1990 x 12 = $23,880

Mark: 0.5 out of 1.5
Rationale: - Correct value from table (0.5 mark)

Sample 2

Restricted Response (1.5 Marks)

(35,000) $199.00/mth + 10%

199 + 19.9 = 218.9/mth

218.9 x 12 = $2,626.80

+ deductable = $2,826.80

Mark: 1 out of 1.5

Rationale: – Correct value from table (0.5 mark)
– Correct process for deductible (0.5 mark)

Note: No mark awarded for final answer. Highlighted final answer demonstrates a lack of conceptual understanding (see *Information Bulletin* 2005–2006).

Sample 3

Restricted Response (1.5 Marks)

$199.00 + 4.50 (2) = $208.00 + 10% = $228.80

($4.50 for each additional $1000)

Mark: 1 out of 1.5

Rationale: - Correct value from table (0.5 mark)
- Correct process for deductible (0.5 mark)

Note: Student introduced a concept (4.50 × 2) that has not been accounted for in the marking guide. Final answer cannot be considered the result of a follow-through error.

Sample 4

Restricted Response (1.5 Marks)

coverage amount = 35 000.

standard - 199.00 + 10% increase for $200 ded.

= 218.90/yr. ÷ 12 mths = $18.24/month.

Mark: 1.5 out of 1.5

Rationale: - Correct value from table (0.5 mark)
- Correct process for deductible (0.5 mark)
- Correct final answer (0.5 mark)

Note: Additional calculation of "per month" rate is unnecessary but not incorrect. Underlining the final answer demonstrates conceptual understanding.

Question 2 | **V–C2** | Restricted Response | (2.5 Marks)

Test Item and Marking Guide

John Dion decides to buy a house for $38 000. He makes a down payment of 5% of the purchase price of the house. The mortgage is amortized over 15 years at a rate of 4.25%. John makes monthly mortgage payments. Calculate the total amount of the mortgage payments he makes in one year.

Answer: $38\,000 \times 0.05 = \underbrace{\$1\,900}_{0.5\ mark}$ *down payment*

$\$38\,000 - \$1\,900 = \underbrace{\$36\,100}_{0.5\ mark}$ *mortgage amount*

$\frac{\$36\,100}{1\,000} \times \underbrace{7.50}_{\substack{0.5\ mark \\ from\ table}} = \underbrace{\$270.75}_{0.5\ mark}$ *monthly payment*

$\$270.75 \times 12 = \underbrace{\$3\,249}_{0.5\ mark}$

Sample 1 | Restricted Response | (2.5 Marks)

5% = 1900

38 000 - 1900 = 36100 x 0.0425 = $\frac{\$1534.25/\text{YEAR}}{12}$ = $127.85/MONTH

Mark: 1 out of 2.5

Rationale:
- Correct calculation of down payment (0.5 mark)
- Correct calculation of mortgage amount (0.5 mark)

Sample 2

Restricted Response (2.5 Marks)

38 000
x 0.05
$1900.00 → down payment

38 000
- 19 000
$19 000 ÷ 12 = $1583.33
+ 7.50
$1590.83 → per month
x 12
$19 090

Mark: 1.5 out of 2.5

Rationale:
- Correct calculation of down payment (0.5 mark)
- Correct value from table (0.5 mark)
- Correct process for calculating total amount of mortgage payments (follow-through error) (0.5 mark)

Sample 3

Restricted Response (2.5 Marks)

$\frac{38\,000}{1000} \times 7.50 = \$285.00$ monthly payment

$38\,000 \times 0.05 = \$1900$ down payment

$285.00 \times 12 = \$3420$ is the amount of the mortgage payment in a year.

Mark: 2 out of 2.5

Rationale:
- Correct down payment (0.5 mark)
- Correct value from table (0.5 mark)
- Correct calculation of monthly payment (follow-through error) (0.5 mark)
- Correct process for calculating total amount of mortgage payments (follow-through error) (0.5 mark)

Sample 4

Restricted Response (2.5 Marks)

$\frac{38\,000}{1000} = 38\ (7.50)$

1900

$38\,000 - 1900 = 36100.00$

$\frac{36100.00}{1000} = (36.10)(7.50) = 270.75$

$(270.75)(12) = \$3249.00$

Mark: 2.5 out of 2.5

Rationale: - Correct calculations (5 × 0.5 mark)

Question 3 | V–C4 | Restricted Response | (1.5 Marks)

Test Item and Marking Guide

A couple earning $4 500 a month (combined gross salary) is considering a mortgage payment of $860 a month. Property taxes would be $220 per month. Calculate the maximum they can afford to pay for heating when their Gross Debt Service Ratio (GDSR) is 32%.

Answer:

$$GDSR = \frac{\text{Monthly mortgage payment} + \text{Monthly heating cost} + \text{Monthly property taxes}}{\text{Gross salary}} \times 100$$

$\frac{860 + 220 + x}{4\,500} = 0.32$ ← *0.5 mark for substitution*

$\frac{1080 + x}{4\,500} = 0.32$
and/or
$1080 + x = 1\,440$
← *0.5 mark for solving*

$x = \$360$ ← *0.5 mark*

OR

$\$4\,500 \times 0.32 = \$1\,440$ ← *0.5 mark*
$\$860 + \$220 = \$1\,080$ ← *0.5 mark*
$\$1\,440 - \$1\,080 = \$360$ ← *0.5 mark*

Sample 1 | Restricted Response | (1.5 Marks)

.032 x 4,500 = $144.00

$220.00 → tax

Total $364.00

4,500 - 364.00 = 4136

Mark: 0 out of 1.5
Rationale: - Incorrect calculations

Sample 2

Restricted Response (1.5 Marks)

$4500

32% = $860 + + $220 / $4500

Mark: 0.5 out of 1.5
Rationale: – Correct substitution (0.5 mark)

Sample 3

Restricted Response (1.5 Marks)

860 + 220 = 1080 ÷ 4500 = .24

1450 ÷ 4500 = .3222$\overline{2}$

1450
−1080
370

They can spend $370 on the heating

Mark: 1 out of 1.5
Rationale: – Alternate strategy (guess and check) (2 × 0.5 mark)
– Incorrect final answer

Sample 4

Restricted Response (1.5 Marks)

4500 x .32 = 1440
1440 - 860 = 580
580 - 220 = 360 They can spend up to $360.00 on heating.

Mark: 1.5 out of 1.5
Rationale: – Correct solution (3 × 0.5 mark)

Question 4 | V–C3 | Open Response | (2 Marks)

Test Item and Marking Guide

In the table below, list and describe two initial costs (excluding the purchase price) that a person may have to pay when purchasing a home.

	INITIAL COST	DESCRIPTION
1.		
2.		

Answer: • *maximum of 0.5 mark for a correct response in each box*

Sample responses:

- *appraisal fees*
- *service charges*
- *decorating costs*
- *insurance for a high ratio mortgage*
- *inspection costs*
- *land transfer tax*
- *down payment*
- *home insurance*
- *immediate repairs*
- *property survey*
- *interest adjustment*
- *prepaid property taxes and utilities*
- *appliances*
- *moving expenses*
- *legal fees and disbursements*
- *lawn care equipment*

Sample 1 | Open Response | (2 Marks)

	INITIAL COST	DESCRIPTION
1.	Home owners insurance	House insurance (in case of damage)
2.	payment on home itself	the cost of the home

Mark: 1 out of 2
Rationale: – Correct response and explanation (insurance) (2 × 0.5 mark)

Sample 2

Open Response (2 Marks)

	INITIAL COST	DESCRIPTION
1.	Renovations	You have to renovate the house with possibly new roofing, new flooring, new cupboards ... etc.
2.	Plumbing	The previous owner of the house that was bought may have not wanted to spend extra time and money on the houses plumbing. You then, as the next owners must pay for things such as; toilets, sinks, showers, bathtubs ..... etc.

Mark: 1 out of 2
Rationale: – Correct response and explanation (renovations) (2 × 0.5 mark)

Note: No marks awarded for plumbing as it is considered the same as renovations.

Sample 3

Open Response (2 Marks)

	INITIAL COST	DESCRIPTION.
1.	land transfer tax	if you buy a large plot of land theres taxes on it.
2.	down payment	the minimum money down to buy the house.

Mark: 1.5 out of 2
Rationale: – Correct initial cost with incorrect description (land transfer tax) (0.5 mark)
– Correct response and explanation (down payment) (2 × 0.5 mark)

Sample 4

Open Response (2 Marks)

	INITIAL COST	DESCRIPTION
1.	House insurance	pay first month of ensurance
2.	apliances	buying fridge, washer dryer etc.

Mark: 2 out of 2
Rationale: – Correct solution (4 × 0.5 mark)

Government Finances

Question 5 | **V–E2** | Restricted Response | (1.5 Marks)

Test Item and Marking Guide

The following revenues were collected by the town of Jamesville for the year 2002. Calculate the percent of revenue collected in government grants.

Business taxes	$ 600 000
Government grants	$ 780 000
Permits, sale of goods	$ 80 000
Property taxes	$ 1 900 000
Transfers	$ 140 000
Other taxes	$ 500 000

Answer :

Total Revenue = 4 000 000 ← *0.5 mark*

$$\underbrace{\frac{780\,000}{4\,000\,000}}_{0.5\text{ mark}} \times 100 = \underbrace{19.5\%}_{0.5\text{ mark}}$$

Note: Total revenue is correct when listed on its own or within the substitution step.

Sample 1 | Restricted Response | (1.5 Marks)

780 000 X 100 = 78 000 000%

Mark: 0 out of 1.5
Rationale: – Incorrect strategy

Sample 2

Restricted Response (1.5 Marks)

600
780
80
900
140
4 000

$\frac{780\,000}{400\,000} \times 100 = 195$

Mark: 1 out of 1.5
Rationale: – Correct sum of grants (0.5 mark)
– Correct answer (follow-through error) (0.5 mark)

Sample 3

Restricted Response (1.5 Marks)

Total = 3 500 000

$\frac{780\,000}{3\,500\,000} \times 100 = 22.3\%$

Mark: 1 out of 1.5
Rationale: – Correct substitution (0.5 mark)
– Correct answer (follow-through error) (0.5 mark)

Sample 4

Restricted Response (1.5 Marks)

$\frac{780}{4\,000} \times \% = 20\%$

Mark: 1.5 out of 1.5
Rationale: – Correct solution (3 x 0.5 mark)

Note: No marks are deducted when a student correctly rounds an answer to a reasonable value.

Question 6 | **V–E3** | Restricted Response | (2.5 Marks)

Test Item and Marking Guide

A Brandon car dealership is importing five cars from Germany (MFN). Each car is worth $50 000 Canadian.

A) Calculate the custom duties paid when importing these five cars. (1.5 marks)

Answer: $5 \times \$50\,000 = \$250\,000$ ← *0.5 mark*

Custom Duties: MFN → $\underbrace{6.7}_{0.5\text{ mark}} \times \$250\,000 = \underbrace{\$16\,750}_{0.5\text{ mark}}$

OR

$\$50\,000 \times \underbrace{0.067}_{0.5\text{ mark}} = \$3\,350$

$\$3\,350 \times \underbrace{5}_{0.5\text{ mark}} = \underbrace{\$16\,750}_{0.5\text{ mark}}$

B) Calculate the cost of one car in euros. (1 mark)

Answer: $\$50\,000 \div \underbrace{1.5399}_{0.5\text{ mark}} = \underbrace{32\,469.64}_{0.5\text{ mark}}$ *euros*

Note: Units (euros) are not necessary in the final answer in Part B as it is implied in the question; however, if the final answer has a $, no mark is awarded for the final answer (incorrect units).

Sample 1

Restricted Response (2.5 Marks)

A) (50 000)(0.067) = 3350 + 100 = 3450

50 000 + 3450 = 53450 × 1.14 =

60 933 × 5 = $304665.00

B) 50 000 ÷ 1.4739 = 33 923.60

Mark: 1.5 out of 2.5

Rationale:
- Correct table value in Part A (0.5 mark)
- Multiplied by 5 in Part A (0.5 mark)
- Incorrect table value in Part B
- Correct answer in Part B (follow-through error) (0.5 mark)

Note: Final answer in Part A cannot be considered the result of a follow-through error. (see *Information Bulletin* 2005–2006)

Sample 2

Restricted Response (2.5 Marks)

A) (50 000) (0.065) = ($3 250) (5) = $16 250

B) (50 000) (1.5399) = 76 995

Mark: 1.5 out of 2.5

Rationale:
- Incorrect table value in Part A
- Multiplied by 5 in Part A (0.5 mark)
- Correct answer in Part A (follow-through error) (0.5 mark)
- Correct table value in Part B (0.5 mark)

Sample 3

Restricted Response (2.5 Marks)

A) 50 000 × 0.067 = $3350 per car

$3350 × 3 = $10 050.00 total custom duties

B) 50 000 ÷ 1.5399 = 32 469.64 × 5 = 162 348.20

Mark: 1.5 out of 2.5

Rationale:
- Correct table value in Part A (0.5 mark)
- Incorrect number of cars
- Correct answer in Part A (follow-through error) (0.5 mark)
- Correct table value in Part B (0.5 mark)

Note: No mark awarded for final answer in Part B. Student's highlighted response does not answer the original question.

Question 7 — V–E4 — Multiple Choice — (1 Mark)

Test Item and Marking Guide

Leanne spent a year as an exchange student in Japan. Prior to leaving Canada she bought 180 000 yen. While in Japan, Leanne spent 150 000 yen. Calculate how much she spent in Canadian dollars.

A) $1 665.00

B) $1 755.00

C) $12 820 512.82

D) $13 513 513.51

Answer: B

Question 8 — V–E6 — Restricted Response — (2.5 Marks)

Test Item and Marking Guide

A municipality needs to raise $75 900 in taxes. The total portioned assessed value of the properties in this municipality is $3 000 000.

A) Calculate the property tax rate in mills for the municipality. (1 mark)

Answer:

$$PTR = \frac{Total\ Revenue\ Required}{Total\ Portioned\ Assessment} \times 1\,000$$

$$\underbrace{\frac{\$75\,900}{\$3\,000\,000}}_{0.5\ mark} \times 1\,000 = \underbrace{25.3\ mills}_{0.5\ mark}$$

B) Calculate the amount of tax revenues generated from a property worth $80 000, if the portioned percentage is 45%. (1.5 marks)

Answer: $80\,000 \times 45\% = 36\,000$ ← *0.5 mark*

$$36\,000 \times \underbrace{\frac{25.3}{1\,000}}_{0.5\ mark} = \underbrace{910.80}_{0.5\ mark}$$

Sample 1

Restricted Response (2.5 Marks)

A) $3\,000\,000 = 300 \div 75\,900 = 253 \div 100 = 2.53$

$253 \div 1\,000 = 0.253$

B) $80\,000 \times \frac{0.253}{1\,000} = 20.24$

Mark: 1 out of 2.5

Rationale:
- Formula inverted (can be taken from resource package) in Part A
- Incorrect strategy in Part A
- Correct fraction in Part B (follow-through error from Part A) (0.5 mark)
- Correct final answer in Part B (follow-through error) (0.5 mark)

Sample 2

Restricted Response (2.5 Marks)

A) $PTR = \frac{75\,900}{3\,000\,000} \times 1\,000 = 25.3\%$

B) $80\,000 \times 0.45 = 36\,000$

$36\,000 \times 25.3\% = 9\,108$

Mark: 2 out of 2.5

Rationale:
- Correct substitution in Part A (0.5 mark)
- Incorrect units in Part A
- Correct solution in Part B (follow-through error) (3 × 0.5 mark)

Note: For information on units see *Information Bulletin* 2005–2006.

Statistics

Question 9 | **V–F2** | Restricted Response with Explanation | (2.5 Marks)

Test Item and Marking Guide

Judges for a talent show auditioned 1 200 people and scored their performances. Dave scored 87% for his performance. Nine other contestants scored 87%. A total of 805 contestants scored lower than Dave.

A) Find Dave's percentile rank. (1.5 mark)

Answer: $P = \left[\frac{B + 0.5E}{n}\right] \times 100$

$\left[\frac{805 + 0.5(10)}{1\,200}\right] \times 100$ } *No marks for 1 correct substitution of B, E or n*
OR
0.5 mark for any 2 correct substitutions of B, E or n
OR
1 mark for 3 correct substitutions of B, E and n

$= 67.5$

$\therefore P_{67}$ *or* P_{68} $\leftarrow$ *0.5 mark*

B) Dave's friend, Tim, is the only person with a percentile rank of 90. The talent show uses the top 10 scores to determine the finalists. Determine whether Tim is a finalist and explain your answer. (1 mark)

Sample Answers:

10% of 1 200 = 120
∴ No, 120 people did better than Tim.

OR

No, because more than ten people did better than Tim.

OR

No, because the top 10% of scores is greater than the top ten scores.

Note: Indication as to whether Tim is a finalist or not is necessary to earn marks in Part B.

Sample 1

Restricted Response with Explanation (2.5 Marks)

A) $\frac{805 + 0.5(10)}{1200} = 67.5^{th}$ percentile

B) Can't be determined

Mark: 1 out of 2.5

Rationale:
- Three correct substitutions in Part A (1 mark)
- Answer not a whole number in Part A
- Incomplete solution in Part B

Sample 2

Restricted Response with Explanation (2.5 Marks)

A) $\frac{805 + .05(9)}{1200} = .674 = 67$ or 68 percentile

B) $1200 \times 10\% = 120$ he is 120th and 10 get in

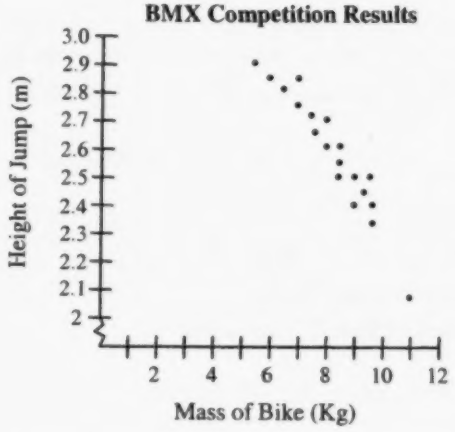
Mark: 2 out of 2.5

Rationale:
- Two correct substitutions in Part A (0.5 mark)
- Correct final answer in Part A (0.5 mark)
- Correct solution in Part B (1 mark)

Question 10 **V–F6** Restricted Response (2 Marks)

Test Item and Marking Guide

The scatter plot below shows the relationship between the mass of a BMX bike and the height the bike can jump.



A) Identify the type and strength of the correlation that exists between the mass of a bike and the height of a jump. (1 mark)

Answer: *Strong* *negative* *correlation*
0.5 mark *0.5 mark*

B) Describe the relationship between the mass of a bike and the height of a jump. (1 mark)

Sample Answers:

The heavier the bike the less the height of the jump.

OR

The lighter the bike, the higher it can jump.

Sample 1 Restricted Response (2 Marks)

A) it depends on how heavy or light your bike is to do the jump.

B) This shows Partial Variation

Mark: 0 out of 2
Rationale: – Correlation type and strength not indicated in Part A
– Relationship not described in Part B

Sample 2 Restricted Response (2 Marks)

A) Negative correlation

B) They are both increasing.

Mark: 0.5 out of 2
Rationale: – Correct correlation type in Part A (0.5 mark)

Sample 3 Restricted Response (2 Marks)

A) Weak negative

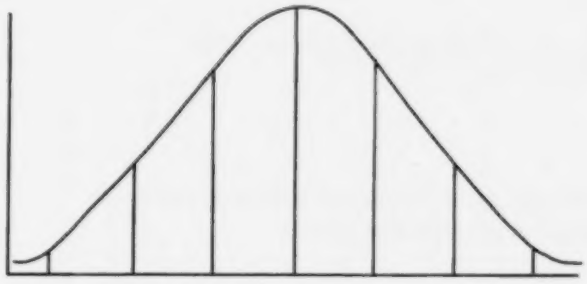
B) The heavyer the bike the lower the jump

Mark: 1.5 out of 2
Rationale: – Correct correlation type in Part A (0.5 mark)
– Correct description in Part B (1 mark)

Question 11 V–F5 Restricted Response (1.5 Marks)

Test Item and Marking Guide

A manufacturer produces televisions with an expected service-life that follows a normal distribution. The mean service-life is 13 years and the standard deviation is 1.5 years.



A) Find the percent of televisions that last fewer than 10 years. (0.5 mark)

Answer: $2.35\% + 0.15\% = \underbrace{2.5\%}_{0.5\ mark}$

B) If 22 000 televisions are manufactured in a particular year, find the number of televisions with a life expectancy greater than 11.5 years. (1 mark)

Answer: $100\% - (0.15 + 2.35 + 13.5) = \underbrace{84\%}_{0.5\ mark}$

$84\%\ of\ 22\,000 = \underbrace{18\,480}_{0.5\ mark}\ televisions$

OR

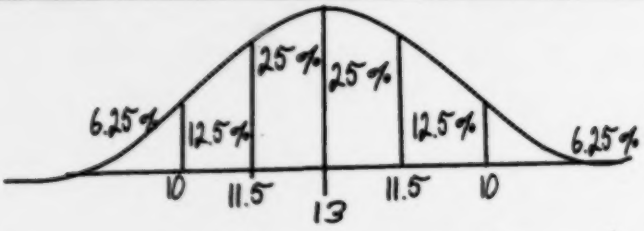
$\underbrace{34 + 34 + 13.5 + 2.35 + 0.15}_{0.5\ mark} = 84\%$

$84\% \times 22\,000 = \underbrace{18\,480}_{0.5\ mark}\ televisions$

Sample 1

Restricted Response (1.5 Marks)

A)



B) 68.75 22000 (0.6875) = 15 125

Mark: 0.5 out of 1.5

Rationale:
- Incorrect solution in Part A
- Incorrect percent in Part B
- Correct solution in Part B (follow-through error) (0.5 mark)

Sample 2

Restricted Response (1.5 Marks)

A) - 2 standard deviations - 2.35%

B) 22 000 (0.8) - 17.600 tvs

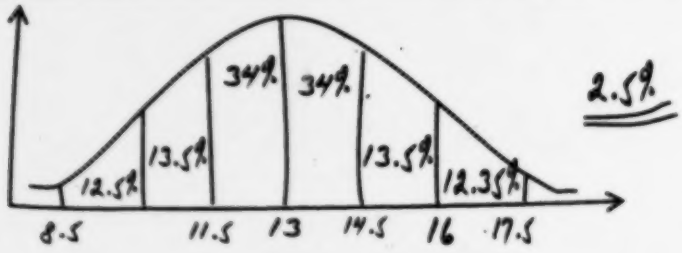
Mark: 0.5 out of 1.5

Rationale:
- Incorrect solution in Part A
- Incorrect percent in Part B
- Correct answer in Part B (follow-through error) (0.5 mark)

Sample 3

Restricted Response (1.5 Marks)

A)



B) .84 x 22 000 = 18 480 televisions

Mark: 1.5 out of 1.5

Rationale:
- Correct solution in Part A (0.5 mark)
- Correct solution in Part B (2 × 0.5 mark)

Note: Student is awarded marks for highlighted answer (2.5%) in Part A.

Question 12 V–F4 Restricted Response (1.5 Marks)

Margo marked ten Consumer Mathematics (40S) tests last night.

Scores		
x	$x - \bar{x}$	$(x - \bar{x})^2$
15	-24	576
18	-21	441
20	-19	361
22	-17	289
25	-14	196
34	-5	25
36	-3	9
66	27	729
74	35	1 225
80	41	1 681
Sum of squares	$\sum(x - \bar{x})^2$	5 532

Use the above data to calculate the standard deviation. (1.5 marks)

Answer:

$$S = \sqrt{\sum \frac{(x - \bar{x})^2}{n - 1}}$$

$S = \sqrt{\frac{5\,532}{10 - 1}}$ ← *0.5 mark for substitution*

$S = \sqrt{614.7}$ ← *0.5 mark for solving*

$S = 24.8$ ← *0.5 mark for final answer*

Note: Accept "n" in addition to "n-1". Answer will be 23.5.

Sample 1

Restricted Response (1.5 Marks)

$$\sqrt{\frac{1681}{10-1}} = \sqrt{167.1} = 27\,922.4$$

Mark: 0 out of 1.5

Rationale: – Incorrect solution

Sample 2

Restricted Response (1.5 Marks)

$$\sqrt{\frac{5532}{10-1}} = \sqrt{552.2} = 23.5$$

Mark: 1 out of 1.5

Rationale: – Correct substitution (0.5 mark)
– Incorrect order of operations (solving)
– Correct answer (0.5 mark)

Note: Student divided by 10, then subtracted 1 during solving stage.

Sample 3

Restricted Response (1.5 Marks)

$$\sqrt{\frac{5332}{10}} = \sqrt{533.2} = 23.1$$

Mark: 1 out of 1.5

Rationale: – Incorrect substitution (transcription error)
– Correct solution (follow-through error) (2 × 0.5 mark)

Variation and Formulas

Question 13 VI–F2 Multiple Choice (1 Mark)

Test Item and Marking Guide

Which one of the following choices represents a direct variation?

A) $y = 4x^2 + 3$

B) $xy = 4$

C) $y = 4$

D) $\boldsymbol{y = 4x}$

Answer: D

Question 14 VI–F1 Restricted Response (3 Marks)

Test Item and Marking Guide

The Acme Advertising Company has the following rates:

- A fixed cost of \$500 to write and design an advertising flyer
- A cost of \$0.15 to print each flyer

A) Write the partial variation equation that relates the total cost (c) to the number of flyers printed (p). (1 mark)

Answer: $c = \underbrace{0.15\,(p)}_{0.5\ mark} + \underbrace{\$500}_{0.5\ mark}$

Note: Award part marks only if the equation is written as a partial variation.

B) Calculate the total cost of producing 60 000 flyers. (1 mark)

Answer: $c = 0.15\,(60\,000) + \$500$ ← *0.5 mark for substitution*

$= \$9\,500$ ← *0.5 mark*

C) Determine how many flyers can be produced for a total cost of \$12 500. (1 mark)

Answer: $\$12\,500 = 0.15p + 500$ ← *0.5 mark for substitution*

$80\,000 = p$ ← *0.5 mark*

Sample 1

Restricted Response (3 Marks)

A) $N = \$500(0.15)$

B) $60\,000 + \$500 \times 0.15 = \$60\,075$

C) $12\,500 - 500 = 12\,000 \div 0.15 = 80\,000$

Mark: 1.5 out of 3

Rationale:
- Incorrect variation formula in Part A
- Incorrect substitution in Part B
- Correct answer in Part B (follow-through error) (0.5 mark)
- Correct calculation of the number of flyers in Part C (2 × 0.5 mark)

Sample 2

Restricted Response (3 Marks)

A) $y = x .15$

B) $60\,000 \times .15 = \$9\,000$

C) $\frac{12\,500}{.15} = 83\,333.3$ flyers can be produced

Mark: 2 out of 3

Rationale:
- Incorrect variation formula in Part A
- Correct solution in Part B (follow-through error) (2 × 0.5 mark)
- Correct solution in Part C (follow-through error) (2 × 0.5 mark)

Note: Formula in Part A is incorrect, but was used properly in Parts B and C and awarded follow-through marks.

Sample 3 Restricted Response (3 Marks)

A) cost = 500 + K(number printed)

B) C = 500 + .15 (60 000)

C = $9 500

C) 12 500 = 500 + .15 (#)

12 000 = .15 (#)

80 000 = # of flyers that can be printed

Mark: 2.5 out of 3

Rationale:
- Correct fixed cost in Part A (constant of variation not defined) (0.5 mark)
- Correct total cost in Part B (2 × 0.5 mark)
- Correct calculation of the number of flyers in Part C (2 × 0.5 mark)

Note: Part marks awarded in Part A because equation given was still a partial variation equation.

Sample 4 | Restricted Response | (3 Marks)

A) $C = F + Kn$ $\quad C = 500 + Pn$

C = cost
P = price to print
n = number of flyers

B) $C = 500 + 0.15(60\,000)$
$= 500 + 9\,000 = \$9\,500$

C) $12\,500 = 500 + 0.15(n)$ $\quad n = 80\,000$ flyers

$\frac{12\,000}{0.15} = \frac{0.15n}{0.15}$

Mark: 3 out of 3

Rationale:
- Correct partial variation equation in Part A (constant of variation defined as "price to print") (2 × 0.5 mark)
- Correct calculation of total cost in Part B (2 × 0.5 mark)
- Correct calculation of number of flyers in Part C (2 × 0.5 mark)

Question 15 VI–F1 Restricted Response (1.5 Marks)

Test Item and Marking Guide

The cost of oil varies directly with the number of litres purchased. The cost of 15 litres of oil is $22.50. Determine the cost (in dollars) of 350 litres of oil.

Answer:

C = *cost*
n = *number of litres*

$C = kn$

$22.50 = 15k$ ← *0.5 mark*

$k = 1.5$ ← *0.5 mark*

$C = (1.5)\,350$

$= \$525$ ← *0.5 mark*

OR

$\frac{15}{\$22.50} = \frac{350}{x}$ ← *0.5 mark*

$\$22.50\,(350) = 15x$

$\$7\,875 = 15x$ ← *0.5 mark (may be implied)*

$\frac{\$7\,875}{15} = x$

$\$525 = x$ ← *0.5 mark*

Note: Table of values, numerical calculation or graph are possible strategies.

Sample 1 Restricted Response (1.5 Marks)

1.5 per litre

1.5 x 350 = 525

Mark: 1 out of 1.5
Rationale:
- Correct identification of constant (0.5 mark)
- Correct calculation of cost (0.5 mark)

Note: Units are not necessary in final answer as it is implied in the question.

Sample 2

Restricted Response (1.5 Marks)

$$\frac{15}{22.50} = 0.67 \times 350 = 233.33$$

Mark: 1 out of 1.5

Rationale:
- Correct ratio to determine alternate constant (litres per dollar) (0.5 mark)
- Correct alternate constant (0.5 mark)

Sample 3

Restricted Response (1.5 Marks)

$\frac{350}{15} = 23.3$ cans

$c = 2250\,(23.\overline{3})$

$c = 52425$

350 L of oil is $52425

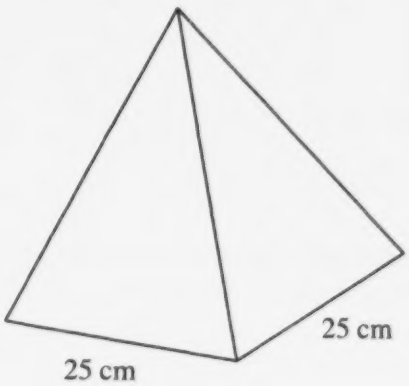
Mark: 1.5 out of 1.5

Rationale:
- Correct solution (alternate strategy) (3×0.5 mark)

Question 16 | **VI–F4** | Restricted Response | (1.5 Marks)

Test Item and Marking Guide

Billy has made a sand castle shaped like a square pyramid. Calculate the volume of sand in the castle if the castle is 36 cm high.



Answer : $V = \frac{1}{3} b^2 h$

$V = \frac{1}{3} (25)^2 (36)$ ← *0.5 mark for substitution*

$= \underbrace{7\,500}_{0.5\ mark} \quad \underbrace{cm^3}_{0.5\ mark}$

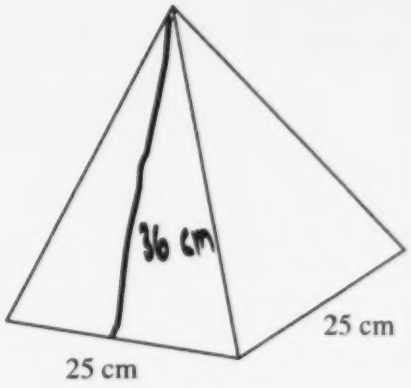
Note: Do not award marks if incorrect formula is used.

Sample 1

Restricted Response (1.5 Marks)

$b = 25 \times 25 = 625$

$\frac{1}{3} \times 625^2 \times L = 4\ 687\ 500$



Mark: 0.5 out of 1.5

Rationale:
- Incorrect substitution
- Correct calculation (follow-through error) (0.5 mark)

Note: Student used $b = 625$, instead of $b = 25$, which continues as a follow-through error.

Sample 2

Restricted Response (1.5 Marks)

$\frac{1}{3}b^2h$

$= \frac{1}{3}25^2(36)$

$\frac{1}{3}225(36)$

$= 0.33 \times 225 \times 36 = v = 2\ 673 cm^3$

Mark: 1 out of 1.5

Rationale:
- Correct substitution (0.5 mark)
- Incorrect answer
- Correct units (0.5 mark)

Investments

Question 17 **VI–D5** Restricted Response (4 Marks)

Test Item and Marking Guide

Rem purchased 1 000 shares of Wartel at $7.50 per share. The commission for buying shares is 7% of the current price.

A) Calculate the total purchase price of the shares. (1.5 marks)

Answer:

$7.50 \times 1\,000 = \underbrace{\$7\,500}_{0.5\ mark}$

$\$7\,500 \times 0.07 = \underbrace{\$525}_{0.5\ mark}$

$\$7\,500 + \$525 = \underbrace{\$8\,025}_{0.5\ mark}$

OR

$\underbrace{(\$7.50 \times 1\,000)}_{0.5\ mark} \times \underbrace{1.07}_{0.5\ mark} = \underbrace{\$8\,025}_{0.5\ mark}$

B) Six months later Rem sold the shares for $8.50 per share. The commission to sell is 7% of the current price. Calculate the amount Rem will receive after selling his stocks. (1.5 marks)

Answer:

$\$8.50 \times 1\,000 = \underbrace{\$8\,500}_{0.5\ mark}$

$\$8\,500 \times .07 = \underbrace{\$595}_{0.5\ mark}$

$\$8\,500 - \$595 = \underbrace{\$7\,905}_{0.5\ mark}$

OR

$\underbrace{(\$8.50 \times 1\,000)}_{0.5\ mark} \times \underbrace{0.93}_{0.5\ mark} = \underbrace{\$7\,905}_{0.5\ mark}$

C) Calculate Rem's gain or loss on the stock transaction. (1 mark)

Answer: $\$7\,905 - \$8\,025 = -\$120$ ← *1 mark*

Note: Award mark if answer is presented as "$120 loss" or "(120)".

Sample 1

Restricted Response (4 Marks)

A) 1000 x 7.50 = $7500.00
0.07 x 7500
= $525.00

B) 1000 x 8.50 = 8500
.07 x 8500
= $595.00

C) Rem gained money when he sold the shares

Mark: 2 out of 4
Rationale: – Correct share cost and commission in Part A (2 × 0.5 mark)
– Correct share cost and commission in Part B (2 × 0.5 mark)

Sample 2

Restricted Response (4 Marks)

A) 1000 x 7.50 = $7500

B) 1000 x 8.50 = $8500
Commission = 8500 x .07 = 595
Total = $9095.00

C) 9095 end
- 7500 beginning
$1595.00 gained

Mark: 2.5 out of 4
Rationale: – Correct share cost in Part A (0.5 mark)
– Correct share cost and commission in Part B (2 × 0.5 mark)
– Correct solution in Part C (follow-through errors from Part A and B) (1 mark)

Sample 3 Restricted Response (4 Marks)

A) (1000) × (7.50) = 7500
(7500) × (0.07) = 525
= $8025.00

B) (8.50) (1000) = 8500
(8500) (0.07) = 595
= $9095.00

C) HE GAINED
$1070.00

Mark: 3.5 out of 4

Rationale:
- Correct solution in Part A (3 × 0.5 mark)
- Correct share cost and commission in Part B (2 × 0.5 mark)
- Correct solution in Part C (follow-through error from Part B) (2 × 0.5 mark)

Sample 4 Restricted Response (4 Marks)

A) 1000 x (7.50) = 7500 (.07) = 525
7500 - 525 = $6975.00

B) 8.50 x 1000 = 8500 (0.07) = 595
8500 - 595 = $7905.00

C) 7905
- 6975
$930.00

Rem gained a cool $930.00

Mark: 3.5 out of 4

Rationale:
- Correct share cost and commission in Part A (2 × 0.5 mark)
- Correct solution in Part B (3 × 0.5 mark)
- Correct solution in Part C (follow-through error from Part A) (1 mark)

Question 18 VI–D3 Open Response (2 Marks)

Test Item and Marking Guide

Thor wants to invest $3 000 for a 6-month period of time. List one advantage and one disadvantage for each investment option. Refer to either liquidity, risk or rate of return in your answer.

Answer:

	Advantage	**Disadvantage**
G.I.C.	• *Low risk* • *Guaranteed rate of return*	• *Limited liquidity* • *Fixed rate of return if interest rates go up*
Stocks	• *High liquidity*	• *High risk* • *No guaranteed revenue*

Maximum of 0.5 mark for a correct response in each box

Sample 1

Open Response (2 Marks)

G.I.C.	large interest rates	won't have enough time to accumulate.
Stocks	good way to invest makes money usually	you might lose it all depending on the market.

Mark: 1 out of 2
Rationale: – Correct disadvantages (2 × 0.5 mark)

Sample 2

Open Response (2 Marks)

G.I.C.	it is the safest type of investment w/certificate	low increase and cannot be refunded easily
Stocks	it is the cheapest type of investment	risk is high when stocks doesn't increase

Mark: 1.5 out of 2
Rationale: – Correct advantage (GIC) (0.5 mark)
– Correct disadvantages (2 × 0.5 mark)

Sample 3

Open Response (2 Marks)

G.I.C.	it is very secure	you make money slowly
Stocks	make money very fast	you could lose it all

Mark: 2 out of 2
Rationale: – Correct advantages and disadvantages (4 × 0.5 mark)

Sample 4

Open Response (2 Marks)

G.I.C.	secure/safe investment	lower payout
Stocks	may have high payout	high risk might lose everything

Mark: 2 out of 2
Rationale: – Correct advantages and disadvantages (4 × 0.5 mark)

Question 19	VI–D4	Open Response	(1 Mark)

Test Item and Marking Guide

Juan is considering investing $50 per month in a registered savings plan. Identify two advantages of registered savings plans that Juan should consider.

Sample answers:

Lower taxes now.

OR

Money for future needs.

OR

When redeemed, tax may be paid based on a lower income bracket (rate).

(2 × 0.5 mark)

Sample 1

Open Response (1 Mark)

good interest rates
very safe

Mark: 0 out of 1
Rationale: – Incorrect response

Sample 2

Open Response (1 Mark)

- the age he is going to retire or how many more years will he work before he retires.
- how much is the interest will he require for his investment.

Mark: 0 out of 1
Rationale: – Incorrect response

Sample 3

Open Response (1 Mark)

1. You are saving for your future so you may be more comfortable.
2. If she does not have insurance and gets paralyzed, this money will be there for her.

Mark: 0.5 out of 1
Rationale: – One correct answer (saving for your future) (0.5 mark)

Note: Credit not given for second answer as they are essentially the same.

Sample 4

Open Response (1 Mark)

- you put money towards retirement

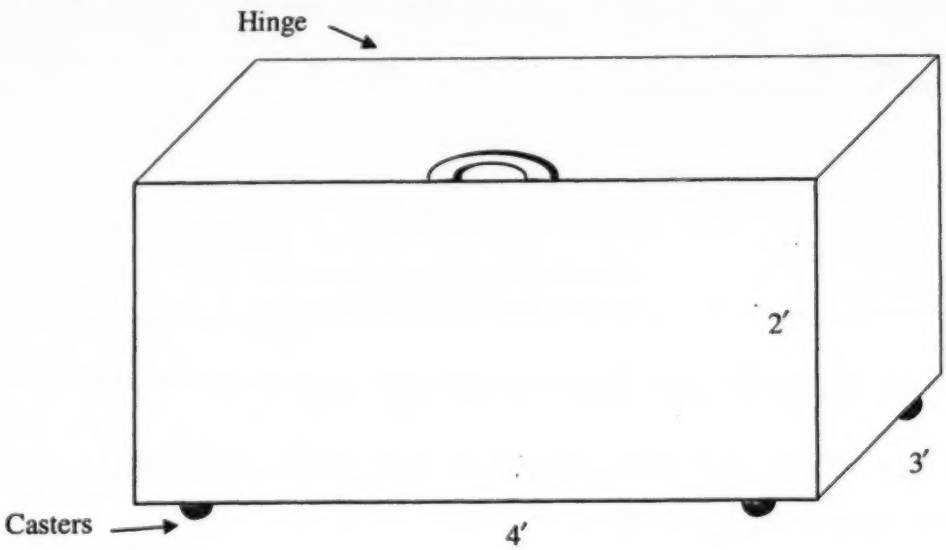
Mark: 0.5 out of 1
Rationale: – One correct answer (0.5 mark)

Design and Measurement

Question 20 | **V–D5** | Restricted Response | (2.5 Marks)

Test Item and Marking Guide

Zhinous is building a toy box for her nephew (see diagram).



A) Determine the number of sheets of $4' \times 8'$ plywood needed to build the toy box. (1 mark)

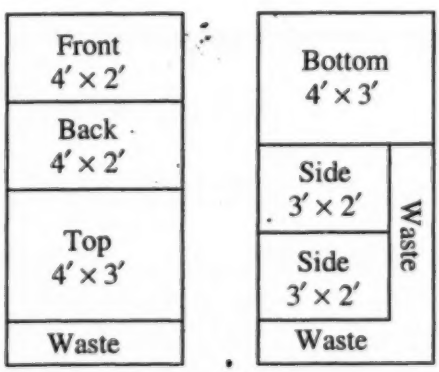
Answer: $2\left[(4\times 3)+(4\times 2)+(3\times 2)\right] = 52\ ft.^2$ *needed* ← *0.5 mark*

$4' \times 8' = 32\ ft.^2$ *per sheet*

$\frac{52}{32} = 1.625$ ∴ *2 sheets of plywood are needed* ← *0.5 mark*

OR

Not to scale



← *1 mark*

∴ *2 sheets of plywood needed*

(continued on next page)

Question 20 V–D5 Restricted Response (2.5 Marks)

Test Item and Marking Guide

B) Calculate the number of square feet of plywood wasted. (0.5 mark)

Answer: 64 ft^2 (2 sheets) - 52 ft^2 (used) = 12 ft^2 ← 0.5 mark

C) If the cost of a $4' \times 8'$ sheet of plywood is \$38.53, calculate the cost of the wasted plywood. (1 mark)

Answer: $\underbrace{\frac{12}{32}}_{0.5 \text{ mark}} \times \$38.53 = \underbrace{\$14.45}_{0.5 \text{ mark}}$

Note: $\frac{12}{32}$ *may be presented as 37.5% or 0.375*

Sample 1 Restricted Response (2.5 Marks)

A) she will need 2.

Mark: 0.5 out of 2.5
Rationale: – Correct answer in Part A (0.5 mark)

Sample 2 Restricted Response (2.5 Marks)

A) $4 \times 3 + 3 \times 2 + 4 \times 2 = 26\ ft^2$
1 sheet needed

B) $4' \times 8' = 32\ ft^2$
$32 - 26 = 6$

C) $6 \times \$38.53 = \$231.18$

Mark: 1.5 out of 2.5
Rationale: – Correct number of sheets in Part A (follow-through error) (0.5 mark)
– Correct solution in Part B (follow-through error from Part A) (0.5 mark)
– Incorrect ratio of wasted plywood in Part C
– Correct solution in Part C (follow-through error) (0.5 mark)

Note: Student accounts for visible components only in Part A. Conclusion of "1 sheet needed" follows from this.

Sample 3

Restricted Response (2.5 Marks)

A) $2(4 \times 3 \times 2) = 24 \times 2 = 48$ PER SHEET
2 WOULD BE NEEDED

B) $4 \times 8 = 32 - 48 = -16$
SO $64 - 48 = 16$ WASTED

C) $\frac{1}{2}$ OF \$38.53 = \$19.27

Mark: 2 out of 2.5

Rationale:
- Correct number of sheets in Part A (0.5 mark)
- Correct calculation of waste in Part B (follow-through error from Part A) (0.5 mark)
- Correct solution in Part C (follow-through error from Part B) (2 × 0.5 mark)

Sample 4

Restricted Response (2.5 Marks)

A) $2 \rightarrow 3 \times 2$
$2 \rightarrow 4 \times 2$
$2 \rightarrow 4 \times 3$
52

4×8
4×8
64
} 2 sheets of plywood

B) 12 of wood left over ... maybe for handle or other stuff.

C) $\frac{12}{64} \times \$38.53 = \$7.22$ wasted

Mark: 2 out of 2.5

Rationale:
- Correct solution in Part A (2 × 0.5 mark)
- Correct calculation of waste in Part B (0.5 mark)
- Incorrect ratio of wasted plywood in Part C
- Correct solution in Part C (follow-through error) (0.5 mark)

Note: Units are not necessary in final answer for Part B, as it is implied in the question.

Appendix A

Irregularities in Standards Tests

A GUIDE FOR LOCAL MARKING

The *Administration Manual for Supervising Teachers* and the *Policies and Procedures for Standards Tests* are distributed to teachers and administrators to ensure consistency in the administration of standards tests. These documents deal with the issues of test material security and the department's policy regarding adaptations and exemptions.

During the marking of standards tests, markers have occasionally encountered test booklets in which there have been irregularities. The following list provides examples of such irregularities, and is not intended to be exhaustive:

- Completely different penmanship in the same booklet
- Incoherent work with correct answer(s)
- Notes from a teacher indicating how he or she has have assisted students during the test administration
- Student offering that he or she received teacher assistance for a question
- Student submitting work on unauthorized paper
- Evidence of plagiarism or cheating

If a student's mark on the test is 0% because he or she left the whole test booklet blank or answered with a combination of non-responses and inappropriate responses, please complete an *Irregular Test Paper Report* to confirm that the result is accurate (i.e., the student was not, in fact, absent or exempted).

Please note that student comments or responses indicating that the student may be at personal risk of being harmed or of harming others are personal safety issues. This type of student response requires an immediate and appropriate follow-up action at the school level. In this case, please ensure the department is made aware that a follow-up has taken place by completing an *Irregular Test Paper Report*.

Except in the case of cheating or plagiarism where the result is a standards test mark of 0%, it is the responsibility of the division or the school to determine how they will proceed with irregularities. Once an irregularity has been confirmed, the marker prepares an *Irregular Test Paper Report* documenting the situation, the people contacted, and the follow-up. The original copy of this report is to be retained by the local jurisdiction and a copy is to be sent to the Instruction, Curriculum and Assessment Branch along with all other test materials.

Irregular Test Paper Report

Test: _____

Date marked: _____

Booklet ID No.: _____

Problem noted: _____

_____

_____

_____

_____

_____

Question(s) affected: _____

_____

_____

Action taken or rationale for assigning marks: _____

_____

_____

_____

_____

_____

_____

Follow-up: _____

_____

_____

_____

_____

_____

Decision: _____

_____

_____

_____

_____

_____

_____

Marker's Signature: _____

Principal's Signature: _____

For Department Use Only—After Marking Complete

Consultant: _____

Date: _____